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General Baden-Powell then started the Boy Scout movement in England, believing them capable if trained, of defending their country.

The next step was the meeting of Ernest Thompson Seton and General Baden-Powell, who found their purposes so nearly identical, their plans and methods so harmonious, that they agreed to join hands, and together they evolved the idea of the present organization. The Boy Scouts of America was begun in the United States early in 1910. Within one and one-half years troops had been organized in forty-six states, in Porto Rico and the Philippines, in Sweden, Russia, Germany, Italy, and South America, besides, of course, in Great Britain. In the United States, President Taft is honorary member of the national organization, and Theodore Roosevelt is honorary vice-president. Mr. Thompson Seton is Chief Scout. Scout-councils in states and cities are composed of leading men. There are more than three thousand scoutmasters and it is estimated that there are more than 500,000 boys who have become scouts. The National Headquarters are in New York, 124 East 28th Street. An official handbook sets forth the principles and plans of organization. Its title page bears the names of Ernest Thompson Seton and Lieutenant-General Sir Robert S. S. Baden-Powell, K. C. B. The unit in organization is the patrol, consisting of six or eight scouts and a leader. Each patrol is named for some animal and the patrol call is in imitation of that animal's cry. Two or more patrols form a troop, which is under the guidance of a scoutmaster. A boy who would become a scout must be twelve years of age, he must know the scout's law, the signs, and salute; the history of the Stars and Stripes; the four standard knots. He then takes the scout's oath, which is as follows:

I give my word of honor that I will do my best,

1. To do my duty to God and my country.
2. To help other people at all times.
3. To obey the Scout Law.

Having passed his examination and taken the oath he enters service as a tenderfoot. After a month as tenderfoot he may become a second-class scout if he can meet the requirements, which include the ability to lay and light a campfire, to cook potatoes and meat with the utensils of the regulation "kit," and to go a mile in twelve minutes. The applicant for second-class must have a dollar in the bank, and must have a knowledge of the bandaging of simple wounds and of elementary first aid to the injured. To advance to the rank of first-class scout, one must fulfill more difficult conditions along similar lines. Numerous honors and badges are offered first-class scouts in the various lines of out-door sports, nature studies, and such work as involves skill and courage, so that a scout's life may be one of continual progress and development. The Scout Law is embodied in the following nine statements:

1. A Scout's honor is to be trusted.
2. A Scout is loyal to the President, and to his officers and to his parents, his country, and his employers.
3. A Scout's duty is to be useful and to help others.
4. A Scout is a friend to all and a brother to every other scout, no matter to what social class the other belongs.
5. A Scout is courteous: That is, he is polite to all, but especially to women and children and old people and invalids, cripples, etc., and he must not take any reward for being helpful and courteous.
6. A Scout is a friend to animals.
7. A Scout obeys the orders of his parents, patrol leader, or Scoutmaster without question.
8. A Scout smiles and looks pleasant under all circumstances.
9. A Scout is thrifty, that is, he saves every penny he can and puts it in the bank.

The scout's uniform consists of short breeches, shirt, hat of khaki, brown belt, loose handkerchief, dark stockings, haversack, and a staff marked in feet and inches. As much time as possible is spent in the open air. Scouts learn all the details of camp life, including a regular routine in daily habit similar to that required in a military camp. Games to be played in the

woods and on or in the water have been devised. Plants, birds, and animals are studied, in fact all the secrets of woods and waters are fair game for the scout.

The Boy Scout movement has so many features that appeal to all boys and such a wide range of choice for the single patrol or the individual boy, that it fills a long felt want, and is not only helping boys to find themselves, but is helping people to realize that boys are not nuisances to be endured till they grow up but are simply splendid material now, waiting to be turned to good account.

Boycott, an organized movement to ruin a person by refusing to do business with him. The term came into use during the Irish land agitations of 1880 and subsequent years. Capt. James Boycott, agent for an absentee landlord, evicted many tenants and made himself otherwise obnoxious. Testimony before Parliament showed that he was amply punished by being cut. That is to say, the Irish agreed among themselves to have nothing to do with him, either in a social or a business way. The term caught the newspaper writer and is now a word in good repute throughout the English-speaking world. When, for instance, a labor organization passes out word not to deal with a certain tradesman, or not to buy a certain brand of goods, it is said to declare a boycott.

Boycotting was not only used to punish evicting landlords and agents, tenants guilty of paying rent, and tradesmen who ventured to hold dealings with those against whom the Land League had pronounced its anathema; but the League was now strong enough to use this means as an instrument of extending its organization and filling its coffers. Shopkeepers who refused to join and subscribe received reason to believe that they would be deprived of their custom; recalcitrant farmers found themselves without a market for their crops and cattle.—*Annual Register.* 1880.

Boyesen, boi'e-sĕn, **Hjalmar Hjörth** (1848-1895), a Scandinavian-American novelist. He was born at Fredericksvärn, Norway, and died in New York. He was educated at Christiania. When his studies were completed he came to America as editor of a Norwegian journal in Chicago. After studying for two years in Germany he was made professor of German in Cornell University, and later professor of Germanic languages and literature in Columbia College. Boyesen is the author of several novels which indicate imaginative faculty and deep human sympathies. In *Gunnar, A Norseman's Pilgrimage,* and *Ilka on the Hilltop,* he gives memories of his native land. The realism of his later works shows the influence of Tolstoi and Howells.

Boyle, boil, **Robert** (1626-1691), an English chemist of the phlogistic period. Boyle was a quiet, modest man of good family and liberal education. He was a student at Geneva, and later he resided at Oxford, then in London. He took part in the formation of the Royal Society and held the office of president from 1680 to 1691. Boyle improved the air pump and worked persistently with gases. He enunciated Boyle's Law, that the volume of a gas varies inversely with the pressure. Boyle urged that chemistry should be studied to enlarge the bounds of knowledge, not merely to manufacture precious metals and prepare medicines, See CHEMISTRY.

Boyle's Law, in physics, a principle relating to the elasticity of gases. Every boy who has a popgun knows that air can be compressed;—that the harder he pushes, the smaller the space into which the air is crowded. The smaller the space into which the air is compressed, the greater its expansive force, and the farther it will throw the pellet. About 1662 Robert Boyle, a member of the Royal Society of London for Improving Natural Knowledge, reduced these observations to a principle known as Boyle's Law. It may be stated in two ways. Both come to the same thing:

The temperature remaining the same, the volume of a given body of gas varies inversely as the pressure upon it. Or,

At constant temperature, the product of the pressure and the volume of a given mass of gas is a constant.

Boyle means by this that if twice the pressure be exerted on a given mass of air, it will occupy half as much space, and that if four times the pressure be exerted, the gas will be crowded into one-fourth the space.

This statement seems exceedingly elementary at the present day, when every high school boy is expected to be familiar with it; but it should be remembered that in Boyle's day philosophers were not through yet with the search for some method of converting the baser metals into gold.

The same principle was discovered about 1676 by a Frenchman named Mariotte; hence in French school books the principle is called Mariotte's Law. It should be stated that Boyle's and Mariotte's Law does not hold good for quite all cases; nor does it hold good at high pressures. Stated popularly, one hundred times the pressure does not reduce gas to one one-hundredth of its former volume. Boyle's Law holds good, however, for all ordinary purposes. See BOYLE.

Boyne, boin, a small river of eastern Ireland. It rises in County Kildare and empties into the Irish Sea about thirty miles north of Dublin. It is memorable in Irish history for a victory gained by the Orangemen under William III, July 1, 1690, over the Stuart forces under James II. Over 1,500 of King James' troops were killed. The battle was final. In 1736 a monument 150 feet high was erected by the Orangemen on the site of the battlefield to commemorate their victory. See ORANGEMEN.

Boys' and Girls' Clubs. The movement for organizing the young people in rural communities for more effective work in the schools, on the farm and in home, and to awaken in them a deeper interest in rural life was started in 1896, by a few county superintendents of schools in Illinois, Indiana and Ohio. The agricultural colleges of those states became interested and lent their assistance, and the movement became popular. The pupils of many schools formed corn clubs, pig clubs, canning clubs, and clubs devoted to other agricultural and home interests. In 1908 the Department of Agriculture launched the movement on a national scale and as a permanent cooperative agency in rural education. By 1916 clubs had been organized in every state in the Union and the movement was supported by national and state legislation.

The work is carried on cooperatively by the States Relation Service in the Department of Agriculture and the state agricultural colleges. Over a half million dollars is expended annually in support of the work, and paid lecturers who are agricultural experts are maintained in every county that is willing to pay a part of their salaries.

NATURE AND SCOPE OF THE WORK. The club work is of a practical nature and the boys and girls learn by doing. The members engage in such projects as appeal to their respective tastes, such as raising corn, making a garden or raising a calf or a pig. Household duties such as canning fruits and vegetables, cooking and sewing appeal to the girls. The project may continue for a few days, an entire season or three or four years, depending upon the nature of the work.

The scope of the work depends upon the age of the club members, the time that can be devoted to it and the amount of money that can be extended upon it. There is scarcely a phase of activity in rural life in which these clubs cannot engage. One significant purpose of the club work is to give those who engage in it definite instruction so that in carrying out his project, the member prepares himself to continue that line of work with success. The members engaged in home project work are visited by the teachers, county agents and other leaders in charge of the work. These leaders give definite instruction for carrying on the work, encourage the members to better management and commend well-doing. The local leader is expected to make these visits at least twice a month.

MEETINGS. Each club should hold regular meetings at least once a month. A carefully prepared program should be carried out, and the meeting should be followed by a social period. Occasionally the officers of the club may invite someone to give a talk as a feature of the program, but generally the parts should be taken by the club members. The meetings should be open to the public and invita-

tions should be sent to the parents and friends of the members.

How to Organize a Club. Any school desiring to organize a club should first obtain the approval of the teacher. It is then proper to write the county superintendent and get his approval. At the first meeting a temporary chairman and secretary should be chosen and committees on constitution and nominations should be appointed. The meeting should then adjourn until the committee on constitution is ready to report. At the second meeting a constitution should be adopted and permanent officers elected. The club is then organized and ready for work. The secretary should write the county superintendent and the county agent notifying them that the club has been organized. While the teacher and other leaders should sustain a supervisory relation to the club, we cannot emphasize too strongly the importance of making the members responsible for the management and work. Otherwise the club will not succeed.

Helps. By writing the agricultural college of its State and the States Relation Service, Department of Agriculture, Washington, D. C., a club can obtain information upon any subject relating to its work. Since these institutions print hundreds of bulletins, the letters should be definite

Boz, a pen name of Charles Dickens, as in *Sketches by Boz.* It rhymes with Mose, of which, indeed, it is but a corruption. See Dickens.

Bozzaris, boz-zăr'is, **Marcos** (1790-1823), a Greek patriot. When a young man he served in the French army. On the outbreak of hostilities between Greece and Turkey he threw himself into the movement for Greek independence. He was the commander of the Revolutionary forces at the siege of Missolonghi. The poet Byron was stimulated by his example. Bozzaris was wounded in making a night attack on the pasha, and died at the age of thirty-three without the satisfaction of knowing that he had aided in the liberation of his native land.

At midnight, in his guarded tent,
The Turk was dreaming of the hour
When Greece, her knee in suppliance bent,
Should tremble at his power;
. . . . . .
An hour pass'd on: the Turk awoke:
That bright dream was his last.
He woke to hear his sentries shriek,
To arms! they come! the Greek! the Greek!
. . . . . .
And heard, with voice as trumpet loud,
Bozzaris cheer his band:
Strike! till the last arm'd foe expires;
Strike! for your altars and your fires;
Strike! for the green graves of your sires;
God, and your native land!

—Halleck.

Bracebridge Hall, a series of sketches of English life by Washington Irving. The sketches were published in 1822 over the name of Geoffrey Crayon.

Braddock, Edward (1695-1755), a British general. He was born in Perthshire, Scotland. He was educated for the army, and served in the celebrated Coldstream Guards. He took part in the battle of Fontenoy, 1745. In 1755 he was sent to America as commander-in-chief of the forces designed to dispossess the French in the upper Ohio Valley. He decided to lead an expedition against Fort Duquesne, now Pittsburg, Pennsylvania. His bearing toward the colonists was supercilious. He had infinite trouble in securing horses, provisions, and guides. He was regarded as one of the most thorough soldiers in the British army. He had corresponding contempt for the informality and want of military bearing on the part of the colonists. Capt. Jack, the most efficient scout and Indian fighter in the country, refused to accompany one who wished to subject him to regular military rules. By order of the British government all American officers ranked below those holding commissions in the British army. Braddock recognized the merit of George Washington, however, and made him an aide. Franklin assisted in procuring supplies.

An expedition of 2,150 men finally got under way early in June, starting from Fort Cumberland, Maryland. A month was spent in cutting roads and in bridging streams before the army came within twenty-five miles of the fort. Some of the troops and a large part of the supplies

were left behind at Little Meadows under Colonel Dunbar; the rest pressed forward On the morning of July 9th Braddock's command turned from the Monongahela River to ascend a ravine. Two hundred Frenchmen barred the way; a large force of Indians lay along either flank concealed in the woods and thickets of the ravine. Braddock had disdained the advice of the Americans; he had failed entirely to send out scouts to see that the way was clear, and even now, when he found himself attacked, he refused to allow his soldiers to shelter themselves. He raved and stormed, driving his men back into the ranks, and ordering them to load and fire and to charge in European fashion. Over half a thousand men, including sixty-three out of eighty-nine officers, fell on the field of battle before he gave the signal for retreat. He himself was so severely wounded that he had to be carried from the field. Washington rallied what was left of the Americans and covered the retreat as well as possible, back to Little Meadows, where Braddock died. In this battle 456 men were slain. Braddock's defeat is the worst repulse ever received by the white men at the hands of the Indians in North America. It left the northwest frontier of that day at the mercy of a horde of bloodthirsty savages elated by victory. The battle ground is now a suburb of Pittsburgh.

See WASHINGTON.

Braddon, Mary Elizabeth (1837-), an English novelist. She was the daughter of a London solicitor and became the wife of John Maxwell, a publisher. She was the author of many popular novels. Among them *Lady Audley's Secret, Eleanor's Victory, Dead Sea Fruit,* and *The Fatal Three* may be mentioned. She conducted *Belgravia,* a London magazine, in which many of her stories were first published. She wrote over sixty novels. They are read little at present, being of the sensational type no longer popular. Miss Braddon's work in England corresponds to that of Mrs. Southworth in the United States.

Bradford, William (1590-1657), a prominent Pilgrim father. He was born in Yorkshire, England, 1590, and died at Plymouth, May 9, 1657. He was one of the original company that set sail on the Mayflower. He signed the famous compact made in its cabin. After Carver's death Bradford was elected governor of the colony, a position which he filled with the exception of a short interval until the time of his death. He was a man of native dignity and ability. In 1622 Canonicus, the sachem of the Narragansetts, sent him a bundle of arrows tied with the skin of a snake. Bradford, nothing daunted, stuffed the skin with powder and bullets and sent it back again. He wrote a *History of the Plymouth Plantation* from the formation of the organization in 1602 to 1647. The manuscript was discovered in England in 1858, and in 1898 it was presented to the state of Massachusetts, where it rests among the valued archives of the commonwealth. It has been suggested that the family name has been derived from the city of Bradford in Yorkshire, a prosperous manufacturing city of 280,000 people. See PLYMOUTH.

Bradlaugh, Charles (1833-1891), an English statesman. He was born in London. He served in the Dragoon Guards and became a lawyer's clerk. In 1860 he founded a periodical called *The National Reformer.* He was a believer in the doctrine that the duties of the present life are of first importance. He rejected all forms of religious faith and worship founded on revelation. He taught that public education and government should be separated from religious affairs—the complete separation of church and state. In accordance with the British custom of permitting the election of non-resident representatives, Bradlaugh was elected to Parliament from Northampton in 1880. As he refused to take the Parliamentary oath on the ground of religious scruples, he was not permitted to take his seat. Bradlaugh appealed to the country in *The True Story of My Parliamentary Struggle.* He was reëlected, but the House of Commons declared him an atheist unfit to sit. In 1886, a new House having convened, Bradlaugh was seated and the former resolutions forbidding his admission were expunged from the records.

Bragg, Braxton (1817-1876), an American soldier and general in the Confederate Army during the Civil War. He was born in North Carolina. After graduating from West Point he served in the Seminole War, and in the Mexican War. For gallant conduct in the latter, he was raised to the rank of lieutenant-colonel. At the beginning of the Civil War he was appointed brigadier-general in the Confederate Army and took command at Pensacola. He held several important commands thereafter, defeating General Rosecrans at Chickamauga, and being defeated himself at Chattanooga by General Grant. He was a favorite with President Jefferson Davis, acting for a time as his military adviser. After the war he was for a time chief engineer for the state of Alabama.

Bragg, Edward Stuyvesant (1827-1912), an American soldier. He was born in New York state and was educated for the practice of law, which profession he followed for a time at Fond du Lac, Wisconsin. He entered the Union Army in 1861, and was promoted until he attained the rank of brigadier-general, commanding the "Iron Brigade" in the Army of the Potomac. In 1877 he was sent to Congress by the Democratic party, and served four terms. He was a member of the Democratic national convention several times. In 1902 General Bragg was appointed United States consul-general to Cuba and later consul-general to Hong-Kong, which position he held until 1906.

Brahe, Tycho (1546-1601), a celebrated Danish astronomer; a student at Copenhagen, Leipsic, and Augsburg. King Frederick II granted Tycho an island on which he built the finest observatory in Europe. He rejected the Copernican system. He held to the idea of the earth as the center about which the sun and stars revolve, but he did have the other planets revolve about the sun. Tycho was industrious. He catalogued 777 stars and recorded the movements of Mars for years. After the king's death Tycho was neglected, and then so persecuted that he went to Germany and entered upon a professorship at Prague where he was joined by his successor Kepler. He was a wonderfully inventive man. An extinct crater on the moon has been named Tycho Brahe in honor of this astronomer.

Brahma, brä'mȧ, the first person in the Hindu triad or trinity. Brahma is the Hindu creator. Vishnu and Siva, the other members of the triad, are the preserver and destroyer, symbols of good and evil, respectively. In a temple of Brahma at Pushkara, he is represented as having four black faces, each of which is directed toward one of the four quarters of the compass. Each face has two large glass eyes. The four-faced head wears a broad red turban, over which hangs an umbrella. The figure is dressed in red clothes. Brahma is reputed to be the author of the Vedas or sacred books. Inasmuch as he is merely the creator of all things, the Brahmins direct their worship to Vishnu and Siva more particularly. The Brahminical religion is older than Buddhism. It recognizes a system of castes. An important doctrine is the transmigration of souls. Infanticide and the burning of widows on their husbands' funeral piles were Brahminical practices. Brahminical worship consists almost entirely of sacrifices, ceremonies, and observances. See BRAHMANS.

Brahmans, or **Brahmins,** one of the four castes of India. Unlike Mohammedism, Christianity, and Buddhism, Brahmanism cannot be traced to a definite founder. According to the tradition of the Hindu priests, Brahma is God himself, the infinite being. Four castes were created by him. The Brahmans, priests or holy men, sprang from the mouth of the deity. They possess all wisdom. The soldiers sprang from the arms of Brahma; the laborers sprang from his thighs; the lowest caste, the serfs, sprang from his feet. The four castes are by no means allowed to intermarry. The holy Brahman, like the Levite, is supposed to do no work but to live on almsgiving, which is enjoined as a sacred duty. He pays no taxes and must not be punished. He eats no flesh, touches no leather or ordinary domestic animal. He must not eat from a plate or other vessel that has been used

by one of a lower caste, lest he be defiled. At a certain age he must marry. A priest who remains single is not respectable. Theoretically there are four stages in life: Youth, married life, and two subsequent stages of fasting and much ceremonial tending to perfection. In later times, however, the relations and occupations by castes have become much confused. The Brahman may now engage in commercial pursuits and hold office.

It is needless to add that the condition of the Brahmans, who are a branch of the white race, is changing rapidly under British rule. As a matter of fact, they are a conquering people differing in blood from the lower castes who represent conquered races. The Brahmans have an extensive literature. Like their European relatives, they believe in a trinity consisting of Brahma the creator, Vishnu the preserver, and Siva the destroyer. The Brahmans are the dominant caste, and are the religious teachers of 200,000,000 people.

See BUDDHA.

Brahms, bräms, **Johannes** (1833-97), a German musician and composer, the author of many songs, ballads, choruses and orchestral compositions. He was born at Hamburg, but spent the greater part of his mature life at Vienna. Although a fine pianist he seldom appeared in public, but preferred to devote himself to composition. His choral compositions are given the highest place by critics, but they are difficult, and consequently less frequently heard than his orchestral works. He has been called the modern Beethoven. The *German Requiem* is considered his masterpiece. Other titles are *Rinaldo, Song of Destiny, Noemia, Song of Triumph.*

Braid, a narrow band or tape formed of three or more strands of silk, wool, or other material. Braid differs from woven fabric in that warp threads only are employed, while weaving involves two sets of threads,—those that run lengthwise, called warp threads, and those that run crosswise, called weft threads. In braiding, the warp threads cross and recross the web diagonally, each thread alternately over and under one or more of the others. It will be seen that braid is much more elastic than a woven web. It is less desirable, consequently, in case strength and firmness are required; but it may be used to advantage in trimming and finishing garments, its elasticity rendering it adaptable to following outlines and forming ornamental figures. The art of braiding is probably older than that of weaving. The variety of articles in whose manufacture it forms a part is endless. So far as is known, the first machine for manufacturing braid was patented in England in 1748, but it is certain that machines were used at about the same time in Barmen, Germany, which became and has since remained the center of the braid industry. It is estimated that, at the present time, more than 100,000 machines for the manufacture of braid are in use in Barmen. The materials used for braiding include straw, bast, wire, cotton, worsted, mohair, silk, linen, jute, tinsel, and others. A different machine is used for each different width and style of braid, but their action is so automatic that one operator can tend from one to eight machines.

Braille, Louis (1806-1852), a French educator of the blind. He was blind almost from birth, but was educated at the Institute for the Blind at Paris. As a lad he developed wonderful proficiency in music. He illustrates the principle that a person deficient in one of the senses may become unusually proficient in the others. Young Louis developed remarkable delicacy of ear and touch. At twenty he was the most remarkable organist in France. He invented the system of writing with points. Braille, as his system is known, is now used almost entirely in institutions for the blind. Braille point has superseded the raised letter entirely for purposes of correspondence. The entire system is based on point pricks in paper. Forty-three letters and ten numerals are based on ten fundamental arrangements of from one to four point pricks in a square. A point prick in the upper left hand corner represents A; one in the upper left hand corner, and another immediately beneath in the lower left hand corner, B; four pricks, one in each corner, represent G, etc. See BLINDNESS.

Brain, that part of the nervous system inclosed in the skull. It is continued downward as the spinal cord through an opening at the base of the skull, called the *foramen magnum.*

The cell substance of which the brain is built is exceedingly soft and easily injured by pressure or friction. It is well protected, however, not only by its thick, bony covering, the skull, but by three membranes which entirely cover it. The outermost of these membranes is thick and tough, and fits closely by its outer roughened surface to the inner surface of the bones. Its inner surface, next to the brain, is smooth. This outer membrane is still called by its early Latin name, *dura mater,* which means *hard mother,* because in early times it was thought that all membranes of the body originated from this. The second membrane is like a delicate transparent sac, its sides flattened close against each other. It fits against the smooth inner surface of the *dura mater,* and is called the *arachnoid,* or *spider's web,* because it is so soft and thin. Beneath the *arachnoid* is a third thin membrane known as the *pia mater,* which is Latin for *kind* or *tender mother.* This membrane is composed of a network of blood vessels held together by tissues and it is these blood vessels that supply the nourishment and remove the wastes of the entire brain. It is almost impossible to remove the *pia mater* from the brain, because it dips into every fissure and surrounds all parts.

On examining the brain as a whole we find that it consists of three parts: a large anterior part, known as the fore-brain or *cerebrum;* a narrow middle portion, the mid-brain; and a posterior part, the hind-brain. The fore-brain occupies the greater part of the skull-cavity, and is nine-tenths of the bulk of the entire brain. A deep fissure partially divides the fore-brain into right and left hemispheres. These two hemispheres are united near their under surface by a narrow band of fibers known as the *corpus callosum,* or callous body. The mid-brain is very small and narrow, and carries the optic lobes, two swellings, into which the sensory nerves from the eyes enter. The hind-brain consists of two parts. One of these is just posterior to and beneath the fore-brain, and is known as the *cerebellum;* the other is united at its narrowest part with the spinal cord. This is known as the *medulla oblongata.*

The structure of the brain is very complex, and only the main features can be considered here. In lower animals, such as the frog, the fore-brain, mid-, and hind-brain, lie in a horizontal plane; but in the human being, they are doubled on one another, so that they form a figure something like a question mark (?). The fore-brain occupies all of the upper curved portion of the question mark; the *cerebellum* is below in the upper part of the stem; and the *medulla oblongata* occupies the lowest part of the stem.

If the brain is viewed from the top, only the two hemispheres of the fore-brain are seen. Each of these is seen to be made up of folds of pale gray matter. These folds are numerous, and are arranged so as to form more or less definite divisions of the hemispheres, called lobes. The folds are known as convolutions; the indentations separating the lobes are known as fissures. Each convolution and each lobe bears a definite name, and it is found very useful in the study of normal, as well as diseased brain-activity, to know both the name and the location of these parts.

When the brain is viewed from below, we can see a large part of the underside of the fore-brain, as well as the mid- and hind-brain. Projecting from the fore-brain, on each side of the mid-brain, are the olfactory lobes. Nerves run through these lobes from the nose to the *cerebrum,* and are the means by which is gained a knowledge of the smell of substances. Just back of the olfactory lobes are the crossed optic or eye-nerves, which enter the mid-brain.

Back of the mid-brain is a band of white matter called the *pons,* or bridge, because it connects the two lobes of the *cerebellum.* The *cerebellum* has a wrinkled appearance; but the wrinkles are regularly arranged and really appear like very small convolutions. The surface of the *medulla oblongata* is smooth.

Twelve pairs of cranial nerves can be seen on the under side of the brain. Some of these nerves carry impulses from the brain to the various parts of the head or body, and are called motor nerves, or nerves that cause motion. The nerve which governs the movement of the eyeball is a motor nerve. Others carry impulses from the various parts of the body to the brain, and are called sensory nerves. The optic nerve is sensory. Still other nerves are both motor and sensory, as in the case of the fifth pair of cranial nerves, which carry impulses from the brain to the muscles of the jaws and eyelids, and impulses from the face and teeth to the brain. The tenth pair of cranial nerves is very important. It largely governs the action of the lungs, the heart, and the stomach. It is called the *vagus,* or wanderer.

The above are some of the features that can be noted by observation of the exterior of the human brain. When the brain is cut into halves, in the direction of the median fissure, one finds that it is a hollow organ, with its cavity surrounded by outgrowths or walls. All regions of the brain are connected with its cavity, which, in turn, is connected with the cavity of the spinal cord. During life this continuous cavity is filled with a fluid known as the cerebro-spinal fluid. Its walls are supplied with blood from a network of blood vessels, and it is the rupture of some of these which is one cause of apoplexy.

If we cut into the brain from the top downward we find that its solid parts consist of two kinds of matter, white and gray. In the *cerebrum* and the *cerebellum,* the gray matter, about one-eighth inch in thickness, is on the outside; the white forms the central core of the mass. In the *medulla oblongata* the gray matter is broken up into masses which serve as centers of origin for various nerves.

In the lower animals, as in the frog, the brain is essentially like that of the human; but the various parts are not developed to the same extent as in the human brain. Thus, in the frog, the *cerebrum* is comparatively small and not at all convoluted, but smooth; the mid-brain and the hind-brain are large. The higher the animal in the scale of life, the more complex is the structure of the brain, shown by wrinkling and folding of its surface into convolutions and lobes. Thus, the brain of the chimpanzee, of the horse, cow, and sheep, is more like the human brain than is that of the fish, frog, or bird.

It is thought that these differences in structure are somehow related to the amount and kind of work that can be done by the brain. In all animals the brain controls all the higher work or activities of the animal, such as voluntary movement and sensations. The brain also controls such important operations within the body as the beating of the heart, breathing, and digestion. An animal may have the stomach removed and continue to live; but it cannot survive the loss of the brain.

The results of experimentation indicate that the seat of intelligence, memory, will, and the emotions in man is in the gray matter or cortex of the *cerebrum.* The cortex is also the seat of conscious sensation. By this, we mean that if the gray matter of the *cerebrum* were removed, a human being would be unable to see, hear, taste, smell, or to exercise the sense of touch. A piece of ice might be placed in the hand and no feeling of cold would result. If the sun shone ever so gloriously upon one without a cerebral cortex, everything would seem to such an one in total darkness. Though breathing and other life processes might continue, though movement would be possible, there would be no consciousness of movement. Such a being would show no signs of fear or pleasure; there would be no feeling of hunger nor any desire to move or to work, to sleep, or to talk.

Patient, careful study of the brain has revealed many wonderful things; but much remains still unknown. We know that the brain is made up largely of nerve cells and nerve fibers. The fibers connect the brain with all parts of the body and connect each part of the brain with every other part. The power to think is connected in some way with the activity of the nerve cells; but in just what way, we do not know. Nerve cells seem to generate and receive impulses and sensations; how

they do it, we do not know. The changes which take place in nerve cells are essentially like those which take place in muscle cells. Nerve cells require air, food, rest, and exercise for their continued well-being, as do other cells and tissues in the body. But they can perform a work in the body that no other cells seem able to do. In the same way we know that nerve fibers conduct impulses and sensations. How they do it, we do not know.—ELLEN TORELLE.

Brandes, brän'des, **George Morris Cohen** (1842-), a Danish author. He was born in Copenhagen, of Jewish parents. His early life was spent in France and Germany. A course of lectures, delivered at the University of Copenhagen and published under the title of *Main Currents in the Literature of the Nineteenth Century,* made him unpopular in Denmark on account of its radical line of thought. Brandes soon after removed to Berlin where most of his work has been done. Brandes' writings are in the line of literary criticism. Among them may be mentioned *Danish Poets, A Story of Ibsen, Aesthetic Studies, Life of Benjamin Disraeli,* and *William Shakespeare, the Man and His Works.* Brandes ranks high as a critic, and it is said that to him is due the credit of having first brought to bear upon Danish literature the influence of modern literary aims and tendencies.

Brandon, a city in Manitoba, on the Assiniboine River, 133 miles west of Winnipeg. It is served by the Canadian Pacific, the Canadian Northern and the Great Northern railways. It is the distributing center for a rich agricultural section. There are numerous wholesale houses, farm implement distributing houses, and various industries manufacturing chiefly agricultural supplies. The city owns electric light, street railway, and water systems and a central steam-heating plant. It is the seat of Brandon College, affiliated with McMaster University, Toronto. The population is about 18,000.

Brandy, an alcoholic liquor fermented from fruits, usually the grape, but if other fruit is used it is designated as cherry, apple, peach brandy, etc. The most celebrated brandy is that of Cognac, France.

Brant, Joseph (1742-1807), a Mohawk chief, and a friend of the British. He was born in the Mohawk Valley, his Indian name being Thayendanaga. His brothers took part in Sir William Johnson's campaign against the French at Lake George. Johnson became interested in the boy, then only thirteen years of age, and sent him to a school for Indians at Lebanon, Connecticut. Later he took the name of Joseph Brant and became interpreter to a missionary. He was employed frequently as agent to various Indian tribes. The Mohawks espoused the British cause during the Revolution and Brant attained the rank of colonel in the British army, showing himself both a brave soldier and a humane man. After the war he was employed several times by the government in making treaties among the Indians. Brant interested himself also in work among his fellow Indians in eastern Ontario. He translated the Gospel of Mark and the English Prayer-book into the Mohawk language. At Brantford, Ontario, a bronze statue has been erected to his memory.

Brass, an alloy of copper and zinc. Ordinary brass is composed of two parts by weight of copper and one of zinc. Brass is harder than copper and is more handsome than zinc. Its bright yellow gives it the appearance of gold. It is much used for ornamental metal work of all sorts, such as gas fixtures, hinges, door plates, hand rails, boxings, eyelets, tubing, wire, kitchenware, and clockwork. Much that passes for brass is really bronze. Brass is very suitable for the making of castings, as it retains its full size in cooling. The surface is usually polished in a turning lathe. It is not known whether brass was in use before the time of the Romans. A form of brass known as pinchbeck is used to make cheap jewelry. An alloy consisting of three parts of brass and two of zinc may be drawn out under the hammer when heated. The brass rolling industry of the United States is centralized in the valley of the Naugatuck, Connecticut. The water is held in large reservoirs to furnish power. A narrow valley, forty miles long, furnishes a total fall of 600 feet. A pop-

ulation of 100,000 people is engaged directly or indirectly in brass manufactures. One hundred and seventy-five million pounds of copper are converted annually into sheet brass by the mills of nine large companies. This small valley uses half the copper mined in the United States. See ALLOY; COPPER; ZINC.

Brazen Age. See HESIOD.

Brazil, a large republic of South America. Its area is 3,218,130 square miles. It occupies a full half of the South American continent, and is larger than either Europe or the United States. It borders on every country of South America, except Chile, and has a coast line of over 4,000 miles. No authentic census has been taken since 1900, but the population is estimated at 25,000,000. About one-third of the population is white. Settlements are confined chiefly to a fringe along the Atlantic coast.

Brazil was discovered in 1499 by Pinzon, a companion of Columbus. He took possession in the name of Spain, and took home a cargo of drugs, gems, and brazil wood for dye. In 1500 Cabral, a Portuguese navigator, was driven by adverse winds upon the Brazilian coast. He landed on Easter Day. He erected an altar, celebrated mass, and, declaring the country a possession of Portugal, he erected a stone cross to commemorate the event. Amerigo Vespucci, for whom the country was subsequently named, explored the coast of Brazil in 1501 and 1503. He also took possession of the region in the name of Portugal. He built a small fort, but just where is not known. He left a garrison of twelve men, and sailed for home with two shiploads of Brazil wood, parrots, and monkeys. A struggle that arose later between Spain and Portugal was settled finally by the pope, who allotted the eastern part of South America, or Brazil, to Portugal, and the western part, or the Andean region, to Spain. Bahia, the early capital, had a prosperous Catholic university a century before the Pilgrims set foot on Plymouth Rock.

In 1808 the Portuguese court was transferred from Lisbon to Rio de Janeiro to escape Napoleon's domination. In 1821 the royal family returned to Portugal, leaving Dom Pedro, a son, as regent. A year later a revolution broke out. The only European throne in America was overturned, independence was declared, and Dom Pedro was proclaimed emperor of Brazil. In 1889 a republic was organized with a constitution resembling that of the United States.

The majority of the people are Catholic. Portuguese is the official language. Indians and negroes counted, about 85 per cent of the population is unable to read or write. There are large colonies of German and Italian settlers in the southern states of Brazil.

Brazil occupies about seven-eighths of the width of South America. The eastern portion corresponds to the Appalachian system of North America. An immense mass of mountains, older than the Andes, has been worn down by wind and water into a highland. It slopes toward the lowlands of the Amazon and the Paraguay that sweep around it in a continuous waterway. The highlands stand like an immense island with the highest shore along the Atlantic coast. The highest elevation, 10,340 feet, is near Rio Janeiro. The highlands have mineral wealth, as yet but partly explored. Coal, iron, gold, mercury, lead, copper, and zinc are known to exist in abundance. The emerald, ruby, topaz, and amethyst are found in various localities. Brazil was at one time the leading country of the world in the production of diamonds.

Brazil is an agricultural country. It leads the world in the production of coffee. The annual crop is worth about $300,000,000. Next in value are sugar, tobacco, cotton, and Paraguay tea. Of natural products rubber, cocoa, timber, dye woods, drugs, and nuts are the chief. Meats, hides, wool, and goat and sheep skins are exported largely. Brazil does business chiefly with England, Germany, and the United States.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	3,218,991
Population (est.)	25,000,000

Number of states	21
Members of senate	63
Members of chamber of deputies.	212
National revenue	$71,600,000
Bonded indebtedness	$671,000,000
Important productions—Exports	
Cacao, pounds	65,600,000
Coffee, pounds	1,651,200,000
Yerba-maté, pounds	144,000,000
Rubber, pounds	93,000,000
Cotton, pounds	82,500,000
Hides and leather	87,000,000
Tobacco, pounds	54,000,000
Sugar, pounds	12,000,000
Number of cattle	3,738,000
Railways, miles	18,000
Manufacturing establishment	11,316
Output of manufactured goods	$407,000,000
Capital invested	$400,000,000
Cotton goods output, yards	257,000,000
Diamond output	$300,000
Number of postoffices	3,415
Letters and postcards	210,989,000

Brazil Nut, a much esteemed nut from the forests of the Orinoco and Amazon. The Brazil nut has a number of familiar names, as cream nut, niggertoe, and Para nut, the last name from the port of Para whence it is exported chiefly. The tree on which Brazil nuts grow is a large, straight tree that rises to a height of one hundred feet before branching. The nuts are globular, and are about the size of a person's head. They weigh several pounds and, when ripe, fall with tremendous force, rendering it positively dangerous to be abroad. Each nut contains from eighteen to twenty-four of the three-sided, wrinkled kernels known in the market. They are fitted in by nature with such art that, once disturbed, the skill of man cannot replace them. Indians gather the nuts, break them open, and bring the kernels down stream to market. Buyers have of late established trading stations farther up the streams nearer to the Indians in the remote nut country, and the industry is increasing. The port of Para sends half a million dollars' worth to London annually. We probably buy as many or more. On pressing, the nuts yield a fine quality of watchmaker's oil. See NUT; BRAZIL; AMAZON.

Sometimes the gatherers are lost in the woods; sometimes canoes, loaded with nuts, are overturned in the rapids and the boatmen are drowned. But the grand danger—the one most dreaded—is that of falling nut capsules. They are five inches in diameter and weigh two or three pounds; falling a hundred feet or more, they come crashing through the branches like cannon-balls. The gatherers keep to their huts while the morning wind is blowing, and . . . occupy themselves at home, cutting open the hard cases with their heavy knives, and drying the nuts in the sun. When the wind dies away, men and women sally out to the gathering, bringing in the nuts on their backs in great baskets.—Dr. Smith, *Gathering Brazil Nuts.*

Bread, a preparation of flour baked for food. Well made bread is one of the most nutritious of foods. It contains so nearly all the ingredients required by the human body that, in case of need, a person can live on bread and water without loss of health. The simplest bread is made of flour mixed with water and baked. Ship's biscuit is made in this way. It keeps well, but it is as hard almost as flint, and tries a sailor's teeth severely. Unleavened bread is mentioned in the Scriptures. Hoecake or cornbread and oatmeal bannocks are made in much the same way, but the baker has learned to make better bread from wheat flour. For an account of the way in which bread is made light and spongy, the reader is referred to the article on YEAST.

It has been found that the loss of food by the conversion of sugar into gas and into alcohol, and their subsequent expulsion in baking, amounts, according to one authority, to seven loaves out of one hundred and seven. To save this loss, experiments have been made to secure lightness and elasticity by forcing air into the dough. Bread made in this way, without being set and raised with yeast, is called aerated bread. It is a very attractive, wholesome sort of bread, but it lacks the taste and permanent popularity of yeast-raised bread. Baking powders for the purpose of raising bread are all made on the general plan of a harmless chemical compound in the form of a powder that may be mixed with flour, and that will generate a quantity of gas when wet in the dough and subjected to the heat of baking. Cream of tartar and saleratus or baking soda are varieties well known to the housekeeper. They do not produce as light biscuit as yeast, but they are quicker in action.

A long controversy as to the comparative

nutritive value of white bread, brown bread, graham, and the like appears to have been decided in favor of white bread. Some coarse breads like graham, named for an eminent physician of London, are more easily digested perhaps than others, but, so far as strength and health are concerned, the choice of bread may be left to each person's own liking. Fresh bread is not so digestible as stale bread, because it is too moist to absorb saliva and other digestive fluids. Crust and toast are dryer and are digested in less time than crumb; white bread in less time than black; and biscuit in less time than loaf bread. Good bread should have left the stomach in from two to three hours. About three-fourths of the bulk of loaf bread is gas or air. About one-third of its weight is water. Weight for weight, bread contains more food than meat. According to current prices in large cities as New York and London, it has been found that money will buy more food in the form of wheaten bread, penny for penny, than in meat, fish, vegetables, or other articles offered in the markets, unless, indeed, exceptions be made in favor of beans and of oatmeal, which authorities recognize as among the most nutritious foods available.

A new milling bakery has been erected in London. It is designed to cheapen the cost of making bread. Clean wheat enters at one end; hot loaves appear at the other. Grinding, sifting, weighing, kneading, the placing of dough in pans, the transfer to electrical ovens, and all other details are managed by machinery. The capacity is 300,000 loaves a day.

See WHEAT; YEAST.

Breadfruit, the most important food plant of the South Sea Islands. The fruit grows on a low tree at a height of ten or twenty feet from the ground, and hangs from the branches in clusters of three or four, looking something like rough, furry muskmelons. The fruit is ready for use just before it is ripe, but, as there are several varieties ripening at different seasons and each tree produces two or three crops a year, the native has little difficulty in finding suitable fruit for his dinner the year around. We can get an idea of breadfruit and the origin of its name by considering that it is filled with a sort of dough. The native digs a pit, puts hot rocks in the bottom, some fresh leaves on the rocks, slices of breadfruit on the leaves, more leaves and stones on these, then more leaves and breadfruit if he likes,—finally covering his pit with earth for half an hour. His bread is then ready to eat hot from the oven. Sometimes stones are heated and a huge pit is made by the efforts of a whole village, and enough bread is baked to last a month or two. Sometimes the entire fruit is baked and is eaten from the shell. A. R. Wallace in his *Malay Archipelago* says: "With meat and gravy it is a vegetable superior to anything I know, either in temperate or tropical countries. With sugar, milk, butter, or treacle (molasses) it is a delicious pudding, having a very slight and delicate but characteristic flavor, which, like that of good bread and potatoes, one never tires of." The breadfruit may also be sliced and dried in the sun to be afterward ground into flour.

Breakwater, a structure at the entrance to a harbor for the purpose of breaking the violence of the waves. The greatest breakwater ever constructed is that at Cherbourg, on the French side of the English Channel. The common method of erecting a breakwater is to sink loads of rough stones, allowing time for them to settle under the action of tides and currents. Then when the piles of stone reach almost to the surface, the top is covered with masonry, sloped as seems best to resist the action of the water. Other breakwaters are built of wooden beams partly under water and attached by chains to some immovable body or bodies. In passing through such a structure the force of the breakers is greatly lessened. See CONCRETE.

Breckenridge, John Cabell (1821-1875), an American statesman and soldier. He was a native of Kentucky, received his education at Center College in that state and undertook the practice of law. He served in the Mexican War, later was sent to the Kentucky legislature, then to Congress and in 1856 he was elected vice-presi-

dent on the ticket with Buchanan. Again in 1861 he was sent to the United States Senate, but resigned to enter the Confederate Army, where he rose to the rank of major-general, serving in many of the important engagements of the war. In 1865 he became secretary of war in Jefferson Davis' cabinet. After 1868 Breckenridge returned to the practice of law in Kentucky.

Bremen, brĕm'en, an important commercial city of northwestern Germany. It is situated at the head of deep-water navigation on the Weser River, thirty-seven miles from the North Sea. Bremerhaven at the mouth of the Weser is its port, though ships drawing no more than seventeen feet of water may ascend to Bremen. With ninety-nine square miles of territory, the city is free, practically forming an independent state of the new German Republic.

Among the cities of Germany Bremen ranks next to Hamburg in foreign commerce. Its port is entered by 3,000 seagoing vessels a year. Bremen merchants own 613 of these. The North German Lloyd company, with 213 ships, has headquarters here. Each year goods to the value of $216,000,000 are shipped outward and the same amount imported.

In 788 Bremen was granted a bishop by Charlemagne. The city was a member off and on of the famous Hanseatic League. Bremen is a typical German city. The old walls have been leveled to make way for boulevards. At the center is a marketplace and a fine old city hall with stained glass windows, great hall, and a handsome carved stairway. A cathedral, a Gothic exchange, numerous statues of celebrities, fountains, queer old gables, crooked streets, and quaint shops make the city a delightful place for a ramble. Population in 1905, 263,440.

See GERMAN EMPIRE; HANSEATIC LEAGUE.

Brenner Pass, a pass in the main chain of the Alps between the headwaters of the Adige and the Inn. It affords a line of communication between Austria and the Valley of the Po. Its highest point is 4,658 feet above the sea. It is about twelve miles long and is open during the entire year. It was the pathway of the Roman legions on their way to the upper Danube, and it was through this pass that the Austrians maintained their grip on the fertile plains of Lombardy. A railway connecting Austria and Italy was built in 1867. Although mountains rise to a height of 3,000 feet on either side, the pass is considered less picturesque than that of other alpine routes.

Breslau, brĕs'lou, the second city of Prussia. It is situated in the far southeast corner on the upper waters of the Oder. It is the capital city of Prussian Silesia. It was wrested from Maria Theresa by Frederick the Great in 1741. The modern city has a population of nearly half a million and carries on an extensive trade in cloth, timber, coal, glass, and grain. Wool fairs are held in June and October. The manufactures include engines, cars, musical instruments, stained glass, cigars, beer, and textiles. The old wall has been leveled to make room for pleasant, shady promenades and drives. The moat has been converted into a series of ponds now enlivened with swans. A zoölogical garden and a botanical garden, museums of art and antiquities, a university library of 350,000 books, including specimens of the earliest printing, a fine old city hall, several churches with stained glass, a market place, numerous statues, and quaint houses, of interest to tourists.

Brest-Litovsk, Treaty of. In 1917 the Bolsheviki came into power in Russia and announced their intention of negotiating with the Central Powers a separate peace, which was signed at Brest-Litovsk, a Polish border town, on March 3, 1918. The Germans imposed outrageous conditions which the majority of the better-class Russians bitterly opposed but were helpless to prevent. The Germans treated separately with the Ukraine, declaring their reason for doing so was that the population had already, through its representatives, proclaimed its independence of Russia.

Failing to extract the food and concessions expected of the people, in revenge, notwithstanding the treaty, warfare was

continued until the general Allied Armistice of Nov. 11, 1918. The Paris terms annulled the Brest-Litovsk document.

Breton, bre-tôn′, **Jules** (1827-1906), a French painter. He was educated at Douai and in a studio in Paris. The subjects of his earlier pictures were taken from the French Revolution. Later, following the example of Millet, he turned his attention to peasant life. Some of his more famous paintings are *The Angelus Bells, The Song of the Lark,* and *The Shepherd's Star.* A number of Breton's pictures have been purchased by Americans. *The Angelus Bells* hangs in the Chicago Art Institute. *The Gleaners* is owned by James J. Hill of St. Paul; *The Evening Call* by Thomas B. Walker of Minneapolis. Breton fared well financially. For a time he painted under a contract with a Paris art dealer who took his canvases at $2,500 each. Later, when he could afford to do so, he held his pictures at a still higher price. The *Communicants* sold lately at $48,000. The pictures painted for the art dealer mentioned, now that Breton is dead, command $25,000 readily. The work of Breton is often compared with that of his friend, Jean Francois Millet, who also painted peasant life. See MILLET.

Millet, a peasant himself, showed the life of his people with the feeling of one in whose veins was the blood of peasants; Breton, the man of the middle class, drew them as one who had learned to love these simple people by long meditation on their lives, and worship of nature to which they seem so near.

The dignity of labor, the rewards of toil are in Breton's pictures, the lovely, the ideal side of the lives of these workers. We might write under all his peasant pictures: "From labor health, from health contentment springs;" under those of Millet: "In the sweat of thy face shalt thou eat thy bread"—the primal curse.

Breviary, brē′vĭ-a-ry, an abridged prayer book containing the daily offices of the Catholic clergy. It was arranged by Pius V about 1568. It contains the Psalms, passages from the Old and the New Testament, and passages from the church fathers,—all in Latin. The English Book of Common Prayer is modeled on the plan of the Roman breviary.

Brewer, David Joseph (1837-1910), an American jurist, for twenty-one years associate justice of the United States Supreme Court. The son of a missionary, he was born at Smyrna, Asia Minor, but received his education in the United States, graduating from Yale in 1856, and preparing for the law at Albany Law School. He began to practice law at Leavenworth, Kansas, and was in turn, probate judge, district judge, and justice of the state supreme court. He became, in 1884, United States circuit judge and in 1889 was appointed associate justice of the supreme court. He is the author of a book entitled *American Citizenship.*

Brewing. See BEER.

Brewster, William (1560-1644), the leader of the Pilgrim Fathers, who founded the Plymouth colony in Massachusetts in 1620. He was born at Scrooby, England, and was educated at Cambridge. Fleeing to Holland with the Separatists in 1608, he taught at Leyden. He came to the New World in the Mayflower, and as long as he lived was a preacher and leader in Plymouth. See PILGRIMS.

Brick, a well known building material. Bricks are really a kind of coarse, porous, unglazed pottery, made from common clay. Almost any reasonably clean clay answers the purpose. It must be free, however, from limestone pebbles, lest the burning convert them into lime which would later absorb water and slake, causing the brick to chip or split open.

Brickmaking is not a complex process. Brick clay, fuel, and water are the essentials. If necessary, the clay is first screened to free it from pebbles. It is then ground, mixed with water, and worked into a plastic, stiff mud in a mill or large wooden barrel in which paddles driven by machinery stir the mass thoroughly. The well kneaded clay is pushed out at the bottom, and is molded or cut into bricks. The largest brick machines turn out 30,000 bricks a day. The green bricks are stacked up under light sheds to harden for a few days. Care must be taken not to let them dry too fast lest they crack.

The air-dried bricks are then built up in large kilns properly constructed to al-

low the flames to race through channels at suitable intervals. Wood or coal and, in some localities, gas, is used for fuel. The firing should be light at first and should increase gradually in intensity. For common brick the heat should reach 1,800° F., and for paving brick the heat should be more intense. The more intense the heat, the more the ingredients, especially sand, which is present in all brick clay, are melted together in a glassy fusion. Fire bricks, in fact, are made of clay containing a large degree of sand and are fired to such a degree of heat that they are afterward virtually fireproof and will neither crack nor warp. They are brittle, however, and in a wall require to be backed by common brick.

The red color of some bricks is due usually to the presence of iron. The redder the brick, the more iron. Dark brown brick also owes its color to burnt iron. Yellow and cream colored brick derive their color from lime and iron.

An ordinary brick is $2 \times 4 \times 8$ inches. Bricks are manufactured, sold, and laid in walls usually at a price per thousand. A chimney builder plans his dimensions in multiples of four inches, allowance being made for mortar. In addition to the regular size, bricks of a thousand conceivable shapes and sizes may be ordered for special cases. There are about 8,000 manufactories in the United States, turning out, it is estimated, 25,000,000,000 bricks annually. About $2,000,000 worth are exported.

The earliest brickmaking of which we have remains was doubtless carried on by the Babylonians and Egyptians in the grain producing valleys of the Euphrates and the Nile, where both timber and stone were lacking. Sun-dried bricks 4,000 years old may be found in a state of excellent preservation. Straw was used to give the bricks greater coherency. For a story of the Egyptian taskmasters who forced the Israelites to gather their own straw from the stubble fields, see Exodus i: 14; v: 4-19.

See ADOBE; CLAY.

Bride of Lammermoor, The, a romance by Sir Walter Scott, published in 1819. The story belongs in the third series of *Tales of My Landlord.* It is a tragic tale, laid in Scotland in the days of William and Mary. The "Bride," Lucy Ashton, is forced by her mother and friends into a marriage with Bucklaw, while loving and betrothed to Ravenswood. On the night of the wedding Bucklaw was found severely wounded in the bridal chamber. Lucy died shortly after in convulsions. At Lucy's funeral, Ravenswood accepted a challenge from her brother. Riding to the place appointed for the duel, the unhappy Ravenswood disappears, evidently drawn by the quicksands into the "Kelpie's Flow." Thus was fulfilled the old prophecy:

> When the last Laird of Ravenswood to Ravenswood shall ride,
> And woo a dead maiden to be his bride,
> He shall stable his steed in the Kelpie's flow,
> And his name shall be lost forevermoe.

The *Bride of Lammermoor,* which almost goes back to Aeschylus for a counterpart as a painting of Fate, leaves on every reader the impression of the highest and purest tragedy.—Emerson.

Bride of the Sea, a poetical name given to the city of Venice. The name had its origin in the ancient custom of "wedding the Adriatic Sea." This ceremony was performed annually. The doge would throw a ring into the sea, uttering the words, "We wed thee, O sea, in sign of a true and perpetual dominion." See VENICE.

Bridewell, a celebrated London prison or house of detention. The name has come down from an old "miraculous" well of St. Bride or St. Bridget. This well was in the vicinity of the monastery of the Black Friars. A royal residence was here in the reign of Henry III. Henry VIII rebuilt the palace for Catherine. It was a "castellated building of some pretension." The scene of Shakespeare's *Henry VIII* is laid in this palace. Wolsey spoke his "long farewell" to all his greatness in the king's antechamber. In 1553 Edward VI gave the palace of Bridewell to the city of London for a workhouse. Later it was used as a temporary prison or place of detention. The system of requiring prisoners to work out a short sen-

DULUTH—Showing Harbor and Aerial Bridge

Lake Pend d'Oreille, Idaho

Lower Falls, Spokane, Washington

WESTERN SCENES

tence was established here. The building was torn down in 1864. The bridewell is now a common term for a workhouse or house of detention.

Bridge, a construction by which a passage is secured across a body of water or an open space. The simplest bridge is a log or slab of stone with an end on either shore. The first step in advance is to lay two or more beams parallel and cover them with flooring. All bridges of this sort depend on the stiffness of the material and its ability to stand the strain of *bending*. A great many small bridges of the present day, floors, and flat roofs are of this sort.

Another kind of bridge may be represented by a spider's thread by means of which the spinner crosses an open space. The ends are made fast to the opposite shores and the thread sustains the weight of the spider by reason of its tensile strength, or ability to stand the strain of a *stretching* force. The circular orb web of the spider seen in dewy meadows is a bridge of this sort. The natives of farther India bridge streams by means of long canes of rattan. The ancient Aztecs of Mexico and the Peruvians understood the art of bridging chasms by means of vines and cables. Some of the finest bridges in the world, as the Brooklyn Bridge, the Suspension Bridge at Niagara Falls, and that at Menai Strait are suspended on wire cables of great tensile strength.

A third sort of bridge is built of short pieces of material, disposed in the form of an arch. The strength of a well built arch depends on the ability of the material to withstand *crushing*. The Romans were the first to use material of this sort extensively in bridging. Bridges of stone and brick are common in all civilized countries. Before the introduction of iron construction, the bridges of cities and important roadways were built on arches. The bridges over the Seine in Paris and the famous London Bridge are of this description. Roman aqueducts and military roads were laid over arched bridges.

If we add the ability to resist pressure from the ends, ability to resist doubling-up force such as is possessed by braces, piling, or the legs of a chair, we have the four kinds of strength utilized by the modern bridge builder. The iron pillars that support warehouse floors and the wooden trestlework of railroad bridges afford examples of material resisting a stress of this sort.

The truss is an admirable invention. It is a frame designed to take the place of the beam required in the first kind of bridge described, or of the arch of masonry. By a very simple but shrewdly devised plan, light beams, braces, and tie-rods are so combined that when the ends of the truss are supported it cannot bend without pulling the tie rods in two. A truss is much lighter and less expensive than a beam of equal strength. Iron trusses longer than any possible beam are entirely practicable and are able to sustain enormous loads.

The cantalever bridge usually consists of two trusses and a central span. Each truss has a shore arm and a river arm which balance on the supporting pier. In short bridges the central span is frequently dispensed with, the river arms of the trusses taking its place.

The Romans were the great bridge builders of antiquity. Their first bridges were of wood. A stone bridge was built over the Tiber about 127 B. C. The Emperor Trajan built a bridge over the Danube forty-six feet above the water. The first stone bridge of which we have any record in England was built near Stratford in 1087. The first stone London bridge was built in 1176. An iron bridge was thrown over the Severn in 1776. It had a 100 foot span and 45 foot rise. Iron is now the prevailing material.

The longest bridge in the world is said to be one crossing the Danube, having a length of 12,705 feet. There is a very long bridge across Galveston Bay, Texas. Brooklyn Bridge is said to be the ninth in length. The highest bridge in the United States is a railroad bridge crossing the Pecos River, Texas. It is 321 feet high. The highest bridge in the world is a new cantalever bridge crossing the gorge of the Zambezi River at Victoria

Falls, South Africa. It is 650 feet long and 420 feet in height. A fine cantalever steel bridge crosses the River St. Lawrence six miles above Quebec. It has a span of 1,800 feet. It is high enough to clear the tallest ship. Tubular bridges consist of wrought iron tubes large enough for railroad tracks to be laid within them. The only bridge of this type is over the Manai Strait, Wales. That formerly crossing the St. Lawrence at Montreal has been replaced by a steel truss bridge.

In calculating the required strength of a bridge, builders find it necessary to allow quite as much for wind as for the weight of the bridge itself and that of passing trains. A bridge across the Tay, near Dundee, Scotland, was 10,780 feet long. It was considered the most remarkable bridge in the world. It blew down in a hurricane in 1879.

See ARCH; ARCHITECTURE.

Bridge of Sighs, a bridge of Venice spanning a narrow canal between the ducal palace and the prison. It was constructed in 1597. It is a graceful structure over thirty feet above the water. It is inclosed at the side, and has two arched passageways through which prisoners were conveyed to trial or led to execution. See VENICE.

> I stood in Venice on the Bridge of Sighs,
> A palace and a prison on each hand.
> —Byron, *Childe Harold.*

Bridgeport, a manufacturing city of Connecticut. It is situated on an arm of Long Island Sound, about fifty-six miles from New York City. It is a railroad and steamboat center, and a city of unusually fine appearance, with well-constructed buildings and pleasant environment. A fine esplanade overlooks the Sound and is an added attraction. Among its manufacturing products are steel and rubber goods, ammunition, hardware, cutlery, sewing machines, typewriters, carriages and automobiles. There are numerous public institutions, many churches and schools. The population in 1920 was 143,538.

Bridgman, brĭj'man, **Laura** (1829-1889), a noted American woman. At the age of two she was attacked by a fever and lost her sight, her hearing, and sense of smell. She may be described, therefore, as a blind deaf-mute. She is noted in the annals of education for the great ease with which she learned to sew, to knit, to read, and to write. She had a touch of marvelous delicacy. By placing her fingers against the lips of a speaker, she could understand what was said. She learned to write with rapidity and accuracy. Anyone whom she had ever met, she was able to recognize by the mere touch of the hand. She became well versed in geography, history, and literature. She became a teacher in a Boston Institute for the education of the blind. She carried on an extensive correspondence with the deaf-mutes throughout the world and was very happy in her work and friends. See BLINDNESS.

Brigade, a group of regiments united temporarily for military purposes. A colonel or lieutenant-colonel of one of the regiments is appointed brigadier-general. When the brigade is broken up he returns to the command of his own regiment. See ARMY.

Bright, John (1811-1899), an English statesman. In 1843 he entered Parliament for Durham. John Bright came into prominence as an advocate of the people for the repeal of import duties on foodstuffs. The Anti-Corn-Law League was established largely through his efforts. During the American Civil War John Bright was an outspoken supporter of the Union cause. He favored the extension of the right to vote to workingmen. He aided in relieving the Catholics of Ireland from paying the expenses of the Protestant church. See CORN LAWS; COBDEN.

Bright's Disease, a breaking down of the tissue of the kidney. It may be due to a severe cold, to scarlet fever, and other infectious diseases, to poisoning by alcohol, to prolonged nervous strain, or to other causes. A mere inflammation, or the acute form, is cured usually by rest; but a disintegration of the tissues, known as the chronic form, cannot be cured. The progress of the disease may, however, be arrested. Instances have been known in which patients lived for years until carried

off by another disease; but, generally speaking, once Bright's disease has secured a firm hold on the kidneys, the patient is likely to be carried off at any time. Richard Bright, whose name is associated with the disease, was an eminent English physician, 1789-1858. He was the first to investigate and make known its character. See DISEASE.

Brighton, brī'ton, a seacoast town fifty miles due south of London. It has a massive sea wall, a fine drive, and numerous hotels. It is a favorite watering place for London society. Queen Victoria owned a residence here until 1841. The present population is about 125,000.

Brilliantine, a dress fabric woven with cotton warp and mohair weft. It is of plain weave, figured in the loom, or woven with two or more colors. Brilliantine is, in reality, another name for mohair. A similar material is Sicilian cloth, which is woven, however, with a heavy weft, producing a ribbed effect. All three of these fabrics have a lustrous surface, shed dust readily, and are durable. See ANGORA WOOL.

Brimstone. See SULPHUR.

Brisbane, brĭz'bane, a city of Australia and capital of Queensland. It is situated about twenty-five miles from the mouth of the Brisbane river, and is of considerable commercial importance. The channel of the river has been deepened so that large vessels can reach the city. Railways connect it with other cities of Australia. The city lies on both banks of the river, a fine iron bridge connecting the two parts. There are many notable buildings, including the Houses of Parliament, the post-office, and the buildings of a technical college. The population is 136,662.

Bristle, a stiff hair on a plant or animal. The stems of many plants are clothed with bristles that impede the advance of insects toward the flowers and tender parts. The Venus flytrap is surrounded by a row of bristles that serve to imprison the insect when the trap closes. The mouth of a flycatching bird is usually surrounded by a row of bristles that assist in catching insects, or, at least, in guiding the insect into the mouth. Many animals "bristle up" by erecting the long hair on the back and shoulders, giving them a ferocious appearance with which to daunt their enemies.

Commercial bristles are obtained chiefly from the backs of hogs. The best are obtained from the gaunt hogs reared in the cold forests of Russia. North China markets 6,000,000 pounds a year. They fetch about 37½ cents a pound. The coolies assort the bristles into several lots of from 2½ to 6 inches in length, and tie them up in bunches about 2 inches in diameter. The Chinese workman is paid about four cents a day, and is expected to prepare half a pound of bristles daily. Fat animals, and those reared in warmer countries, have softer bristles. Bristles are much used to make painters' brushes, hair brushes, and by harness makers to tip the ends of their waxed threads.

To "bristle up," a classical expression used by Shakespeare, signifies making a sudden show of courage.

Bristol, a city of England. It lies 118 miles due west from London. It is situated on the Avon, seven miles from the Severn, at the head of tidewater navigation. Bristol is noted for its capacious docks. The tides rise to the extraordinary height of forty feet, the greatest in Europe. The city has long had an extensive commerce with all parts of the world. Large coal mines are found near by. Glassware, pottery, and soap are manufactured in large quantities and exported to the British colonies. The total foreign business of the year is valued at about $65,000,000. There are large shipbuilding interests. The Great Western, the first steamship to make regular voyages across the Atlantic, was built here. Sebastian Cabot was born at Bristol. In his day Bristol was the chief seaport of Great Britain. Bristol ships visited the Newfoundland seal fisheries each year long before any European settlements were made in North America, and, indeed, Bristol merchants had been interested in explorations in the Atlantic before Columbus. The city and its business are growing rapidly. The population is about one-third of a million. See ENGLAND.

Britannia, an ancient name for the island of Great Britain. It is still a favorite with the poets, as in Thomson's "Britannia rules the waves."

Britannia needs no bulwarks,
No towers along the steep;
Her march is o'er the mountain waves,
Her home is on the deep.
—Campbell's, *Ye Mariners of England.*

British Columbia, the most westerly province of the Dominion of Canada, lies between Alberta and the Pacific Ocean. Its length from north to south is 740 miles and its greatest breadth 620 miles. The area is 355,855 square miles. It is the third province in size in the Dominion and exceeds the combined areas of California, Oregon and Washington. The coast contains many deep fiords like those in Norway, so that the entire coast line measures 7,000 miles.

The People. In 1911 British Columbia had 392,480 inhabitants, including 20,000 Indians and about an equal number of Chinese. About one-third of the white people are English, one-fifth Scotch and one-tenth Irish. There are a number of French, Italians and Scandinavians, and a few Japanese.

Surface and Drainage. The Rocky Mountains and Coast Range occupy a large part of the province. The Gold Range and Purcell and Selkirk mountains are minor ranges. The Selkirks are famous for their snow-capped summits, glaciers, water falls and clear mountain lakes. The most important cross valleys are Crows' Nest Pass; Kicking Horse Pass, crossed by the Canadian Pacific Railroad, and Yellowhead Pass, crossed by the Grand Trunk Pacific.

The chief rivers are the Columbia, the Fraser, the Skeena and the Stikene, which flow into the Pacific and are navigable for large boats in their lower courses. The Peace and Laird rivers drain the northeastern part of the province into the Mackenzie. Innumerable lakes occur in the valleys, the largest being Okonagan, Kootenay, and Arrowhead. Lake Louise and Glacier Lake are among the finest gems of mountain scenery in the world.

Climate. West of the mountains the climate is mild and equable owing to the warm winds from the Pacific, and the rainfall is very heavy, varying from 115 inches in the north to 32 inches at Victoria. Since the mountains condense most of the water vapor in the atmosphere before it passes over their summits, the rainfall in the valleys is light, and east of the principal range the country is arid. The western slopes of the coast ranges are covered with dense forests.

Industries. The mountains are rich in minerals and mining is the leading industry. The annual output of minerals amounts to about $30,000,000, one-third of which is copper. Coal, with $6,000,000, ranks second and silver with $1,500,000 third. Zinc, lead, coke, building stone and gypsum are produced in paying quantities.

The fisheries rank second among the leading industries. The value of the salmon pack exceeds $10,000,000 annually, and has increased to such proportions as to place British Columbia first among the provinces in the value of its fisheries.

Wherever the soil can be tilled it is fertile. Large crops of wheat, oats, barley, potatoes and vegetables are raised. The climate and water are ideal for dairy purposes, and the manufacture of butter and cheese is rapidly increasing. Raising live stock is also profitable. The valleys in the southern part of the provinces are adapted to fruit growing, and small fruits, apples, peaches and other fruits are raised in paying quantities.

Transportation. Three transcontinental lines—the Canadian Pacific, the Grand Trunk Pacific and the Canadian Northern—cross the province from east to west. With their branches these roads have a mileage of about 2,000 miles in British Columbia. Prince Rupert, Vancouver and Victoria are the important seaports, and regular lines of steamships ply between them and the ports of China, Japan and Australia. Other lines make regular connection with Seattle, San Francisco and other ports on the Pacific Coast of the United States.

Education. The public schools are directed by a minister of education. The University of British Columbia at Van-

couver is at the head of the educational system. There are normal schools at Victoria and Vancouver.

CITIES. The chief cities are Victoria, the capital; Vancouver, Nanaimo, Nelson, New Westminster and Prince Rupert.

GOVERNMENT. A lieutenant-governor appointed by the Governor-General of Canada for five years is at the head of the government. He is assisted by a council of six ministers who are members of the House of Commons.

HISTORY. The region was first explored by Captain James Cook in 1778. In 1792-94 Vancouver surveyed the coast to the north and circumnavigated the island that bears his name. The Northwest Company founded the first government in 1821. Their rights were taken over by the Hudson's Bay Company, who built a fort on the site of Victoria in 1846. This led to a controversy by the United States who claimed the territory on the strength of the Louisiana Purchase. The present international boundary was fixed by arbitration. In 1858 the colony on the mainland was named New Caledonia, but the next year the name was changed to British Columbia. In 1859 Vancouver was made a crown colony. British Columbia objected to joining the Dominion, but finally agreed to do so, provided the Dominion government construct or cause to be constructed a railroad connecting the province with the other provinces of the Dominion. The Canadian Pacific Railway was constructed in accordance with this agreement. In 1916 full suffrage to women was voted and prohibition was adopted.

British Empire, that part of the world which acknowledges the authority of the British Parliament. It is by all means the greatest empire the earth has ever seen. One-fourth of the entire area of the globe belongs to it; and 400,000,000 people in all grand divisions are under the protection of its flag. A telegraph cable encircles the globe, touching only British territory. Space will not permit an entry of the names of all the possessions, but the chief divisions may be stated as follows.

1. THE UNITED KINGDOM: England and Wales, Scotland, Ireland, the Isle of Man, and the Channel Islands.

2. EUROPEAN POSSESSIONS: Gibraltar and Malta.

3. ASIATIC POSSESSIONS: Aden, British North Borneo, Ceylon, Cyprus, Hong Kong, India and dependencies, The Straits Settlements, Weihaiwei.

4. AFRICAN POSSESSIONS: Union of South Africa, Southwest of Africa; Bechuanaland Protectorate; Rhodesia; Nyassaland; Tanganyika Territory; British East Africa; Uganda; Egypt and the Sudan; British Somialiland; Nigeria; Gold Coast; Sierra Leone.

5. AMERICA: Bermudas, Canada, Falkland, British Guiana, Honduras, Newfoundland, Labrador, West Indies, including the Bahamas, Barbados, Jamaica, Leeward Islands, Trinidad, and Windwards.

6. AUSTRALASIA: Australia, British New Guinea, New Zealand, and numerous islands and islets in Oceanica.

The government of the empire is elastic. The United Kingdom is governed by Parliament direct. Executive authority is placed in the hands of a cabinet—virtually a committee of the houses of Parliament. The crown, that is to say, the king, or, to be exact, a minister responsible to Parliament, appoints an officer known as a governor, or a governor-general, or by some other name, for each colony or protectorate. His authority varies with conditions. Wherever the inhabitants are sufficiently intelligent to govern themselves and are sufficiently numerous to make it worth while, governmental matters are left to local legislatures elected by the people. In Canada and Australia, for instance, the governor-general is as unlikely to veto legislation as is the king at home. None of the colonies are taxed by Parliament. Local legislatures are given freedom, and are even permitted to levy import duties on goods coming from the home country. Through liberal treatment of this sort, the various parts of the empire remain loyal to the home government.

The extent of the British empire is well expressed by Daniel Webster. He speaks

of "a power which has dotted over the surface of the whole globe with her possessions and military posts, whose morning drum-beat, following the sun, and keeping company with the hours, circles the earth with one continuous and unbroken strain of the martial airs of England." Rudyard Kipling puts the same thought in other words:

We 'ave 'eard o' the widow at Windsor,
It's safest to let 'er alone:
For 'er sentries we stand by the sea an' the land
Wherever the bugles are blown.
. . . . . .
Take 'old o' the Wings o' the Mornin'
An' flop round the earth till you're dead;
But you won't get away from the tune that they play
To the bloomin' old rag over'ead.

British Museum, a national collection of science, literature and the arts. It is one of the attractive features of London. The present building occupies the site of the old Montague House mentioned in English literature. It is built in the form of a hollow square, with two-story galleries and a basement. The principal front, a block in length, faces Russell Street and is adorned with a colonnade of forty-four Ionic columns. The collections were begun with a gift of coins, antiquities, and books from Sir Hans Sloane in 1753. By act of Parliament a copy of every newspaper, book, pamphlet, or sheet of music copyrighted in the Empire is forwarded to the Museum. In 1857 it was found necessary to fill the interior of the square with a library building. A fine reading room in the center under a circular dome is within easy access of 2,500,000 printed volumes and many thousand priceless manuscripts. Desks are provided for 300 readers—altogether the greatest reading room in the world for scholars. Catalogs are at hand and attendants bring whatever is desired. New books are coming in at the rate of 60,000 a year. There are forty-three miles of shelves. The building cost nearly $4,000,000. The library is the greatest in the world. The most valuable single volume is a Mazarin Bible, the first book printed with movable type.

The entire contents of the Museum are arranged in eight departments in the care of a staff of 320 persons. The management is in the hands of forty-eight trustees, including the Archbishop of Canterbury, the lord chancellor, and the speaker of the House of Commons.

It is impossible to enumerate the contents of the galleries and cabinets. Volumes, not pages, are required to enter the names. The first editions, rare books, and the manuscript writings of such people as Luther, Newton, Galileo, Burke, Cromwell, Milton, Gustavus Adolphus, Mary, Queen of Scots, Napoleon, Byron, Franklin, Frederick the Great, and a thousand others fill many a cabinet. The Roman gallery, the Assyrian gallery, the Hellenic room, and the hall of Egyptian antiquities present an orderly but overwhelming array of coins, casts, busts, vases, statues, weapons and armor, winged lions in stone from Nineveh, Etruscan vases of unknown antiquity, mummies from the Egyptian pyramids, and Theban sculpture in granite, alabaster, and sandstone. The Rosetta Stone is here, as well as fragments of papyrus rolls from the Nile and specimens of the hieroglyphics of the priests and the cuneiform writing of Babylon. Not the least interesting are antiquities of the period when Roman legions and Roman civilization prevailed in England. There are enough unread inscriptions to keep scholars busy for a century.

The natural history collections, the most instructive in the world, have been removed to a special building in front of Kensington Gardens. Scholars and sightseers visit the old museum. School children go to the new museum of natural history to see the birds' nests, plants, and mounted animals.

Brittany, the northwestern peninsula of France. When the Anglo-Saxons overran England, a large migration of Britons took refuge across the English Channel in the French province of Armorica. It was known afterward from the name of these settlers as Brittany. It formed one of the large dukedoms of France, and was at times almost independent. The inhabitants of entire sections of the country, especially along the west coast, still speak the Breton language. It is closely akin to

the Welsh. The manners, dress, and folk lore of the people also indicate that they are British, not French. Of late education in the French language has been required in all schools. The Breton language and costumes will soon be of the past. See NORMANS.

Broad Arrow, a device not unlike the broad-winged point of an arrow. Since about 1700 it has been stamped or stenciled on the public goods, especially military stores, of Great Britain. It is a felony to remove the mark from government stores, and an offense against the law to be found in possession of property marked or branded with the broad arrow. It may be remembered that during the late war between Japan and Russia, Great Britain denied the right of Russia to search ships to detain military supplies marked with the broad arrow, or to question their destination. The corresponding brand in this country is U. S. A.

Broadcloth, a fine quality of smooth, lustrous woolen cloth. It is plain woven, fulled, slightly napped, and sheared close. The best broadcloth is that intended for men's wear. Men's broadcloth is black. The wool is dyed usually in the raw state, or fiber. After weaving, the cloth is fulled until the fiber-ends of warp and weft are felted. This makes raveling impossible and hemming unnecessary. In finishing, the broadcloth is wetted, steamed, calendered, and hot-pressed until it is smooth and glossy. Broadcloth designed for women's wear is made of high grade wool which, as in all broadcloth, is carded and not combed. After weaving, the cloth is fulled carefully. It is then napped, steamed, and plunged into cold water, dried, sheared, and brushed. This process of napping, steaming, etc., is repeated from three to six times, the object being to produce an even, nappy, lustrous surface. The alternate steaming and cold water plunge are said to "fasten the bloom," or preserve the luster. After finishing in this way, the cloth is dyed, sheared a second time, hot-pressed, rolled and put up for market. The finest grades of broadcloth are light in weight, pliable, smooth, and lustrous. The threads of the weave are invisible.

Broadway, the most notable street in the New World. It is a broad, busy thoroughfare, and is indeed the principal business street of New York City. Starting at Bowling Green, the southern tip of the island, it runs northerly and due north in a broken, straight line. It connects with an old post road up the Hudson. The name has been extended to this road as far as Albany.

Brobdingnag, or **Brobdignag,** a country which Gulliver visits in Swift's *Gulliver's Travels.* Brobdignag was famous for the enormous size of its inhabitants and of all objects in it. See GULLIVER'S TRAVELS.

Brocade, a silken fabric having a raised pattern usually of flowers or foliage, interwoven with gold and silver. The raised appearance is produced by throwing the warp or weft threads into relief in the process of weaving. At one time embroideries were called brocades. The invention of the Jacquard attachment to the ordinary loom made possible the production of fabrics showing raised figures, and gave rise to a distinction between embroidery and brocade or loom-figured goods. At present any fabric, whether of silk, wool, or cotton, having raised figures produced in the loom, is called brocade. See JACQUARD.

Broch, Brough, or **Burg,** round towers found in northern Scotland and in the Western Isles. The walls, built of dry stone without mortar, are from ten to twenty feet thick at the base. They rise in some instances to a height of fifty feet and inclose a circular plat of ground from twenty-five to fifty feet in diameter. The tower is entered by a single doorway large enough for a domestic animal. The lower part of the wall is occupied by chambers opening upon the inner court. Above the chambers, at a height of about ten feet from the ground, a horizontal gallery about a yard wide and high enough to permit a man to stand upright, runs completely around the tower. It is accessible by a single stairway. Windows from the gallery look out upon the court. If

the walls be high enough, a second or even a third gallery adds its circuit, with windows directly above those of the first. Many of these towers were built on rocky promontories, points of land extending into the water of a lake, or places of natural strength, not infrequently surrounding a well or spring of water. Stout doors in the main entrance, outer walls, and dry ditches render it very probable that these towers were constructed by the rude inhabitants as a place of refuge for themselves and their cattle. Unless taken by surprise before they could provision their stronghold, it is evident that a neighborhood could hold out behind these fireproof walls for an indefinite time against any ordinary attack.

In some respects, these places of refuge suggest the cliff dwellings of Arizona, but they are thought to be relatively modern. Zealous antiquarians have unearthed bits of whalebone and cod, showing that the builders were fishers; remnants of bones of the deer, ox, sheep, goat, and pig suggest some forwardness in husbandry; there are evidences of spinning and weaving; stone lamps, bowls, cups, mortars, and pestles throw some light on their household arts; bone and horn implements testify to native ingenuity; bronze articles and iron spears, swords, knives, axes, and chisels show that these builders and occupiers had traffic with southern Europe. In all probability the brochs were constructed by the Celtic Highlanders as a defense against the Norse Vikings that devastated the coasts of western Europe for several centuries after the abandonment of Great Britain by the Romans in 410.

Broché, bro-shā′. See CASHMERE SHAWL.

Brock, Sir Isaac (1769-1812), a British soldier, who made a noteworthy record in military affairs. He entered the army at the age of sixteen; five years later he was made lieutenant, served in the West Indies, Holland and elsewhere, was put at the head of the 49th Infantry, and in 1802 was sent to Canada where he suppressed a threatened mutiny. After three years he returned to England, but in 1806 was again in North America. He commanded the troops in upper Canada and became lieutenant-governor of that province. General Hull, governor of the territory of Michigan, opened the War of 1812 by invading Canada from Detroit. Brock defeated him and his entire army. For this Brock was knighted in the Order of the Bath, but three days later he was killed at Queenston while attacking a United States force gathered on the Niagara frontier. The House of Commons voted a sum amounting to about $7,500 for the erection of a monument at London in honor of General Brock. Another monument to him was erected at Queenston in 1842.

Brockton, a city of Massachusetts, the largest boot and shoe manufacturing center in the country. It is on the New York, New Haven & Hartford railroad, and is about twenty miles south of Boston. Other manufactures are shoe machinery, motorcycles, tools, furniture, and rubber goods. The population of Brockton in 1910 was 56,878.

Brocken. See HARTZ MOUNTAINS.

Bromine, a non-metallic element. It was obtained from sea water in 1826. At low temperatures it is a reddish-black liquid, but at 63° F. it is converted into a heavy red vapor. The liquid is about 4.5 times as heavy as water. It has a salty taste but no odor. Bromine is a caustic. It turns starch yellow. Like chlorine, bromine has bleaching properties. In medicine bromide of ammonium is administered for whooping cough and infantile convulsions. This bromide is considered useful in nervous diseases generally. Bromide of potassium is given for sleeplessness, epilepsy, hysteria, delirium tremens, and various swellings, tumors, and diseases of the skin. Overuse is followed by stupor, loss of speech, and of memory.

Bronchitis, bron-ki′tis, an inflammation of the mucous membrane lining the bronchial tubes. The membrane may become inflamed and swollen to such an extent as to interfere with breathing. Bronchitis is most likely to attack tenderly reared children, old people, and those whose occupations require long hours in rooms filled with gas or flying dust. The symptoms are those of a severe cold. As reme-

dies a mustard plaster, a hot foot bath and a glass of hot lemonade may be recommended. A Turkish bath is excellent. In severe cases physicians prescribe ipecac and seneca root.

Bronco. See MUSTANG.

Brontë, brŏn'te, **Charlotte** (1816-1855), an English writer. She was one of three sisters, daughters of an English clergyman, and was for a time a governess in Brussels. She wrote four books, *The Professor, Jane Eyre, Shirley,* and *Villette. Jane Eyre* is celebrated; the rest are forgotten or are of interest simply because they were written by the author of *Jane Eyre.* It is said that any writer can produce one successful novel, but that only a genius has material for more than one. It is a small collection of fiction that cannot afford a place for *Jane Eyre.* Miss Brontë was married in 1854 to the Rev. A. B. Nichols, her father's curate.

Bronze, an alloy of copper. The name is related to *brown.* Copper forms from seventy to ninety per cent of the alloy. Other metals entering in are tin and zinc. Bronze used for bells contains as high as twenty-five per cent of tin. The bronze used formerly for cannon contained about ten per cent of tin and a small amount of zinc. The bronze used in making statuary varies greatly in composition. Some statues are made of brass almost pure. Others contain from one to twenty-five per cent of tin, zinc, or sometimes lead. Bronze has been improved by the addition of a fraction of one per cent of phosphorus. An alloy of copper and aluminum, called aluminum bronze, has great tensile strength. Bronze was known to the ancients. In fact, the use of bronze preceded that of iron and steel, and gave the name to the so-called Bronze Age. For many purposes bronze is superior to iron. It is a tough metal not subject to rust. The ancients found it very satisfactory for swords, axes, and edged tools. This, before they were familiar with methods of making steel. See BRASS; BELL; ALLOY.

Bronze Age. See ARCHAEOLOGY.

Brook Farm, a New England socialistic community. It was organized in 1841 by George Ripley and his wife. Two hundred acres of land were purchased near West Roxbury, Massachusetts. Among those interested were Nathaniel Hawthorne, Amos B. Alcott, Charles A. Dana, Ralph W. Emerson, Theodore Parker, George W. Curtis, and Margaret Fuller. It was proposed to found a coöperative colony, or club, to farm, practice various kinds of handiwork, and to live simply and inexpensively. The members desired to be free from carking cares in order to have ample time for mental development. The plan worked seemingly well for a time. Surplus products were sold to outsiders. Educational work of all grades, from school to college, was undertaken. Outsiders were permitted to attend on payment of a small tuition. In 1843 the association came under the influence of certain ideas of Fourier. The interest of many members fell off in consequence. In 1846 the principal building was destroyed by fire, and in 1847 the organization broke up.

Brooklyn, one of the five boroughs of New York City. It occupies the western end of Long Island for ten miles solid. With the exception of several fragments, notably Prospect Park, the range of hills in which Washington sought to keep the force of Howe at bay has been graded, paved, and converted into a handsome residence section. Brooklyn was incorporated in 1801. In the course of growth it absorbed a full score of villages until it was the fourth city of the Union, but it was in turn consolidated with New York in 1898.

Brooklyn has been called "the sleeping place of Manhattan." Wealthy New Yorkers of the brownstone front type have been able to maintain homes up Central Park way, and New York's poor have congregated in the down town slums; but the well to do—the thrifty—have sought homes on Long Island. It is estimated that from 50,000 to 100,000 people, enough for a large city in themselves, leave New York City for Brooklyn at nightfall. The problem of transportation has been a serious one. It is not an easy matter to move a hundred thousand people in an hour; yet all desire to go at about the same time. Steam ferries in-

numerable ply from shore to shore of the East River, connecting with Brooklyn car lines. A suspension bridge, as wide as a street and having two stories, was swung across on huge wire cables in 1883. Two others are in course of erection, while two tunnels under the East River, completed in 1908, greatly facilitate transportation by subway.

The parks, schools, libraries, streets, and transit facilities of Brooklyn have been well and honestly managed, presenting a marked contrast to the thievery current at times in New York. Brooklyn has been called a city of churches. Plymouth Church, long the pastorate of Henry Ward Beecher, and the Tabernacle, the church of Thomas De Witt Talmage, are here.

Brooklyn is not wholly a residence city. Aside from the thousands of shops, groceries, palatial stores, and other places of business that pertain to a city of a million and a third of people it is the seat of enormous manufacturing interests. Nearly $6,000,000 a year are paid to wage earners in foundry and machine shops. Nine-tenths of the sugar consumed in the United States is refined at Brooklyn. From $12,000,000 to $15,000,000 worth of coffee is roasted here each year for the large wholesale houses. The printing and binding of a large part of the books issued by New York publishers are done in Brooklyn. There are many other important industries, as the making of ropes, bagging, gloves, and porcelain. Few cities of the Union exceed Brooklyn in the total annual value of manufactures.

The United States navy yard attracts many visitors. It is the best equipped yard possessed by the government. Monster battleships are received here for shelter and repairs and the government is also undertaking the construction of ships on its own account. The yard is located on Wallabout Bay, where the floating prisons of the British rode at anchor during the Revolutionary War. Over 11,000 Americans who died from inhuman treatment on board of these prison hulks in sight of green trees, air, and water, lie buried here in the government grounds.

Brooks, Phillips (1835-1893), an American clergyman. He was a native of Boston. His people were first Congregational, then became Unitarian, and landed finally in the Protestant Episcopal church. Young Brooks was educated at Harvard and then was sent to the Episcopal Theological Seminary at Alexandria, Virginia, where he qualified for the ministry. At Harvard he was at a center of abolition and Unitarian doctrines; at Alexandria, a center of slavery and Episcopal doctrine. In this way he learned to see more than one side of a question. During the Civil War he was a staunch supporter of the Union, yet held to his friendships with his old Southern classmates at the seminary.

From the charge of a church in Philadelphia he was called to the rectorship of the Trinity Church of Boston, which he held from 1869 until elected bishop of Massachusetts. Aside from the powerful influence of his sermons on the private lives of his hearers, Bishop Brooks stood for the removal of sectarian prejudices. He objected to his own people's using the term "The Church," as though there were but one. He fellowed with the New England clergy and broke down much of the Puritan prejudice that existed against Episcopacy.

He was respected at home and abroad. Visiting England, he was invited to preach before the queen. He delivered a series of sermons in Westminster Abbey less than a year before his death.

Patience and strength are what we need; an earnest use of what we have now; and all the time an earnest discontent until we come to what we ought to be.

The care of the body and the care of the soul are not two duties, but two parts of one duty.

Broom, a well known household implement. The name belongs first of all to various shrubs of the pea family. They have long, pliant, willow-like branches. The common Scotch or Irish broom is about twenty feet high, with a wealth of erect, slender branches and large yellow locust-like flowers appearing in early summer. The twigs were much used in the making of coarse household and stable

brushes or besoms, just as bundles of willows, hazels, or other twigs were used for similar purposes in our colonial days. Through the use of this particular plant for sweeping, the old name of besom fell out of use in favor of broom. In America a very excellent besom, or broom, as it came to be called, was made from a suitable length of a hickory sapling. The upper part was shaved down to form a handle. The lower end, usually a tough butt, about four inches in diameter, was divided or shredded into fine splints, making a heavy, but exceedingly durable and effective broom for coarse work. A turkey wing was used for lighter work. The broom now in common use is made from broom-corn, a variety of sorghum. The "tops," or slender, tough, seed-bearing panicles, proved to be an excellent material for carpet brooms and whisk brushes, and came into general favor for that purpose about 1850. The last United States census reported 1,526 broom factories with a capital of $9,616,780, and an annual output valued at $18,490,847. Many protests have been made by these manufacturers against the making of brooms in penitentiaries, but as the broom makers have formed large combinations or trusts their complaints now have a less just foundation.

Broom-Corn, a remarkable grass belonging to the same species as sorghum, kaffir corn, and durra. The stalk is succulent, but it lacks the sweetness of sorghum. The seeds are borne at the top of the stalk in panicles having long, straight branches. The tops or "brush" are used in broom-making, whence the name. Broom-corn is of two types, the dwarf and the standard. The dwarf grows from four to six feet high. The brush is used for whisk brooms and other small brooms. The standard type grows to twice the height of a man's head; the brush is from eighteen to thirty inches long, and is used for carpet brooms.

Broom-corn is considered a native of the warmer parts of the Old World. The seed weighs fifty pounds to the bushel. About two quarts are required per acre. Broom-corn requires much the same growing conditions as corn, though it is able to withstand a greater degree of drought. The plant makes growth anywhere in the corn belt, but the harvest season requires dry weather as the brush is discolored by rain. The brush is cut off at maturity. The seeds are scraped off by hand, or are removed by a broom-corn thresher. The tops are sorted and are cured under cover to retain their bright, greenish color. After drying, the brush is put up in bales weighing from 300 to 400 pounds. The yield varies from a bale to two bales an acre. The price runs from $50 a ton to three times that sum. Broom-corn is a money crop in the region extending from central Illinois to the Panhandle of Texas. Illinois farmers ordinarily raise the standard brush; Oklahoma and Kansas, having a drier climate, produce the dwarf brush. The American crop for 1909 was as follows:

State	Tons
Illinois	4,200
Missouri	900
Kansas	3,300
Texas	10,800
Oklahoma	26,900
Colorado	3,000
New Mexico	1,000
Total	50,100

Brother Jonathan. See CONNECTICUT.

Brougham, brōō'am or brōōm, **Henry, Lord** (1778-1868), a British statesman, orator and man of letters. He was a native of Edinburgh, was called to the English bar, entered Parliament and worked with the Liberals for various reforms, becoming a leader in debate. In 1820 he won public favor by his fearless and eloquent defense of Queen Caroline against George IV. He received a peerage, and in the ministry of Earl Grey, became Lord High Chancellor of England. Lord Brougham wrote on many subjects, being widely interested in science and literature. He was instrumental in founding the University of London in 1825, and two years later helped to establish the "Society for the Diffusion of Useful Knowledge," an organization which had immense influence in the matter of popular literature. So brief a sketch can give no adequate conception of the career

of this remarkable man. In literature he produced nothing lasting and where his influence had been most felt he was well nigh forgotten when he had once passed from the scene. We must, therefore, conclude that he lacked something of true greatness. Nevertheless, Lord Brougham's ability and energy, his talent, perhaps even his eccentricities, made him a wonderful man. It has been said that from 1820 to 1840 "no Englishman in any civil career played so important a part in public affairs or enjoyed so wide a fame as Henry Brougham." He was gifted with a phenomenal memory and with a command of language almost boundless. His vigor and energy seemed inexhaustible. Although tall, bony and loose-jointed with harsh features and fiery temper, which he did not always restrain, he was able with utter fearlessness and with perfect control over every power to use his advantages and disadvantages alike, to attain the ends for which he labored. And the ends were noble. "Of every human right Brougham was a champion; of every human wrong an avenger." The following quotation is from one of Lord Brougham's speeches. The subject was "Law Reform" and the speech, delivered before the House of Lords, lasted six hours:

"It was the boast of Augustus, and it formed a part of the glory in which his early perfidies were lost, that he found Rome of brick and left it of marble,—a praise not unworthy of a great prince, and to which the present reign also has its claims. But how much nobler will be the sovereign's boast when he shall have it to say that he found law dear and left it cheap; found a sealed book, left it a living letter; found it the patrimony of the rich, left it the inheritance of the poor; found it the two-edged sword of craft and oppression, left it the staff of honesty and the shield of innocence!"

Brown, Alice (1857-), an American novelist and writer of short stories. She was born in New Hampshire, and many of her stories are descriptive of New England life and character. She taught school for some years but gave up teaching to devote her time to literary work. Her writings show insight into character, carefulness in style, and finish. She is specially successful in the short story. *Meadow Grass* is a collection of some of the best of these tales. Among other writings are *The Road to Castalay, Fools of Nature,* and *Margaret Warrener.*

Brown, Elmer Ellsworth (1861-), an American educator. He was born in Kiantone, New York. He received his education at the Illinois State Normal University and the University of Michigan, studying later at German universities, and receiving the degree of Doctor of Philosophy at Halle. After teaching in various public schools he became assistant professor of pedagogy at the University of California and later the head of the department. In 1906 he was appointed commissioner of education for the United States. He resigned in 1911 to accept the chancellorship of New York University. A number of works on education are from his pen.

Brown, John (1800-1859), a noted abolitionist. Born at Torrington, Connecticut of Puritan ancestors. His sixth ancestor, Peter Brown, came over in the Mayflower. In 1805 the Browns moved to Ohio and settled in a wild country, where John grew up fond of a rifle and the woods. During the War of 1812 John's father had a contract to supply the government with beef; and John, then a lad of a dozen years, took a drove of cattle a hundred miles through the wilderness alone.

He came up barefooted and bareheaded, with a liking for Indian ways, wood lore, and cattle, but with a distaste for school. He scarce mastered the four operations in arithmetic, and had no knowledge whatever of grammar; but he was fond of reading history, and had an intimate acquaintance with the Scriptures. Passing by the idea of preaching he took, like Lincoln, to the practice of surveying. In his expeditions around the head waters of the Ohio he became acquainted with the Harper's Ferry region and developed a quickness of eye and ear and a knowledge of woodcraft that made him an expert border fighter later on.

In business matters John Brown seemed unable to stick to any calling long enough to make money. From surveying he tried his hand as a lumber dealer, postmaster, wool grower, farmer, wool merchant, fruit

grower, stock fancier, and land speculator, but failed in all. His mind was evidently on something else.

During his business experience he visited England with a disastrous shipment of wool; but his losses on wool, amounting to financial ruin, seemed to have made little impression. He spent his time studying military affairs and plans of fortifications, even crossing over to Germany and France for that purpose. He visited prominent English abolitionists and solicited financial aid, saying that he held himself destined to take up arms against slavery. About this time Mr. Gerrit Smith, a wealthy land owner, offered a large tract of land in the Adirondack region of New York to make free homes for runaway slaves. Brown removed his family to North Elba in this new country and undertook to receive the colored people, to settle them in cabins, and to teach them the rudiments of northern farming. North Elba thus became a well known terminal of the so-called "underground railway."

In 1854 Congress passed the Kansas-Nebraska act leaving it to the settlers of Kansas to decide whether that territory should come into the Union as a free or a slave state. The citizens of Missouri and adjacent slave-holding states took steps to control elections and secure Kansas soil for slavery. The Abolitionists of the North, at that time extending from Maine to the Mississippi, organized colonization societies, and hurried in settlers to hold the territory for freedom. A bitter border war sprang up between the incoming "intruding, hymn-singing Yankees," with their dogs, cattle, rifles, and Bibles, and the determined resident men of Missouri. Midnight murders, harrying of stock, burning cabins, settlements in ruins, violence at the ballot-box, and even pitched battles were features of that unhappy time. John Brown and his six sons hastened to Kansas to engage in the "holy crusade for freedom." Captain Brown, also known as "Ossawattomie Brown," from his place of settlement, was in the thickest of the fray.

Towards the close of the struggle, Brown went East. Under cover of collecting money and gathering arms to carry on border warfare in Kansas, he embarked upon a long cherished plan—a vast project for freeing the country from slavery by exciting the slaves to revolt. In the spring of 1859 he established a depot of clothes, blankets, food, pistols, rifles, and ammunition at Chambersburg, Pennsylvania. Among other warlike supplies were a thousand nine-inch dirks to be fastened to poles, with which he purposed to arm the slaves. In June he rented an abandoned farm with several buildings, in the mountains, five miles from Harper's Ferry, and concealed a force of men in the barn lofts. During the daytime Brown and a friend or two were in sight, apparently interested in sheep-raising. At night Brown drilled his men or sent them to bring supplies to their hiding-place.

Sunday night, October 16, 1859, Brown and his associates, sixteen white men and five blacks, set out with a wagon load of extra weapons for Harper's Ferry. They cut telegraph wires, stationed guards on the bridges, seized the United States arsenal and a rifle factory, and took possession of the town. A midnight passenger train for Washington city was detained, with some resistance on the part of passengers who supposed train robbers were holding them up. A negro porter was shot dead. The train was finally allowed to proceed. Passengers threw notes from the windows as they traveled, and gave a general alarm. As morning came on the citizens were arrested as fast as they appeared on the streets until over sixty were shut up in the arsenal. In the meantime Brown sent messengers to arrest prominent country gentlemen in the vicinity, and to summon the slave population to rise in arms. But the effort was a flat failure. The slaves were worse scared than the white people, and the day passed with nothing accomplished. By nightfall Virginia militia men had closed in on the town. Brown's sentinels were shot down or driven into the armory where they made a stubborn defense. By Tuesday morning a company of United

States marines under command of Col. Robert E. Lee, afterward Gen. Lee, arrived at Harper's Ferry, battered in the armory door with a long ladder, and overpowered the survivors. Of Brown's force, ten were shot during the siege, five escaped to the mountains, the rest were put in prison and brought to speedy trial at Charleston, the county seat. Brown was found guilty of treason, and conspiring and advising with slaves and others to rebel, and murder in the first degree." December 2, 1859, he was hanged in the public square. His remains were delivered to Mrs. Brown who conveyed them to North Elba, their Adirondack home. Wendell Phillips spoke at the funeral.

Although the Civil War has well nigh obliterated the traces of Brown's raid, it is still too early to speak judicially of his faults or his merits. No other execution in this country has caused so much excitement. Mrs. Brown freely stated that her husband had planned the raid for twenty years. He had thought the slaves would flock to his standard prepared to fight. He designed to follow the Allegheny Mountains clear to South Carolina, keeping in touch with the North by a long line of forest fortifications held by Northern volunteers and escaped slaves. He underestimated the ability of the Virginians, and over-estimated the intelligence and courage of their bondmen. His plan never had a chance of success and yet the general alarm created by the unsuccessful attempt was one of the immediate causes of the withdrawal of the Southern States from the Union. Few who carelessly sing,

John Brown's body lies mouldering in the grave,
But his soul goes marching on,

can now realize the intense detestation and equally intense enthusiasm once awakened by these words.

No doubt Brown had secret support, yet few openly approved his methods. In the South he was execrated, yet Southern men were not wanting who did him full justice. Governor Wise of Virginia said to the people of Richmond. "They are themselves mistaken who take him to be a madman. He is a bundle of the best nerves I ever saw cut and thrust and bleeding and in bonds. He is a man of clear head, of courage, fortitude, and simple ingenuousness. He is cool and collected. He was humane to his prisoners. He inspired me with great trust in his integrity as a man of truth. He is fanatic, vain, and garrulous, but firm, truthful, and intelligent." Col. Washington, one of the gentlemen held by Brown as a prisoner, said, "Brown was the coolest and firmest man I ever saw in defying danger and death. With one son dead at his side, and another shot through, he felt the pulse of his dying son with one hand, and held his rifle with the other, and commanded his men with the utmost composure."

Congressman Vallandigham of Ohio, a strong upholder of slavery, who visited Brown and questioned him in prison with a view to political capital, reported, "It is vain to underrate either the man or the conspiracy. Captain John Brown is as brave and resolute a man as ever headed an insurrection. In a good cause and with a sufficient force, he would have been a consummate partisan commander. He is the farthest possible removed from the ordinary ruffian, fanatic, or madman."

See HARPER'S FERRY.

Brown-Sequard, sā-kär′, **Charles Edward** (1818-1894), a Franco-American physician, noted for his treatment of nervous diseases. His father was an American sea captain from Philadelphia, his mother a French woman. He studied medicine in Paris. After gaining some distinction abroad he came to the United States, where he was appointed to the chair of physiology and pathology at Harvard. He was later connected with the Virginia Medical College, and in 1869 became professor of pathology in the School of Medicine at Paris. In 1873 he established a medical journal in New York and returning again to Paris became professor of medicine in the College of France. He published several professional works, lectures, and articles in medical journals. Among them are *Physiology and Pathology of the Nervous System* and *Lectures on Nervous Afflictions.*

Brown University, an educational institution located at Providence, Rhode Island. It was founded in 1764, at Warren, under the name of Rhode Island College. It was later removed to Providence, and in 1804 the name was changed in honor of Nicholas Brown who had bequeathed a large sum of money to the institution.

Brown University in non-sectarian, but is, and always has been, under the auspices of the Baptist demonination. It has extensive and well equipped buildings, a library of about 160,000 volumes, and an observatory containing one of the most powerful telescopes in America. There are sixty-five instructors, between seven and eight hundred students, and its property, including endowment, is valued at about $5,000,000.

Browne, Charles Farrar (pseudonym, Artemus Ward) (1834-1867), an American humorist. He was born at Waterford, Maine, and died at Southampton, England. He learned the printer's trade, working on *The Carpet Bag,* a Boston comic weekly. He set the type for many of Saxe's humorous poems, and for Shillaber's *Mrs. Partington's Gripsack.* It is possible that this atmosphere of humor acted as an inspiration, for he soon started out, with a grotesque *Panorama,* as a comic lecturer. Successful from the first, he became the "dear delight of lecture halls." His works, in book form—*Artemus Ward, his Book, Artemus Ward, his Travels among the Mormons, Artemus Ward, his Book of Goaks, Artemus Ward in London,*—all have lost that which made his lectures irresistible, the personality of the lecturer. His manner was solemn—so naturally and simply solemn—as to be in itself mirth-provoking. Combined with this was a wit capable of giving to the commonplace some sudden turn or twist that would reveal a surprisingly comic side. Some of the witticisms of Artemus Ward are still current:

Always live within your income, if you have to borrow money to do it.

An occasional joke improves a comic paper.

Brownie, a Scotch fairy. In Scotland belief was strong in the existence of benevolent fairies who helped people out by working in the night. Sometimes a troop of brownies would cut or thresh grain, churn, guard the flock, etc. A prosperous farm was reputed to be guarded by the brownies. Brownies were never to be seen or spoken to. Palmer Cox has taken up the idea admirably in his "Brownie" pictures. See FAIRY.

Browning, Elizabeth Barrett (1809-1861), an English poet. She was the daughter of Edward Moulton-Barrett, a wealthy merchant, resident at the foot of the Malvern Hills. Her father took great pains with her education, and she was fond of reading and study. She wrote verses before she was eight years old. When about seventeen she published a poem entitled *Essay on Mind,* which, in later years, she considered unworthy of a place in a complete edition of her writings. In 1832 she published a translation of *Prometheus Bound,* a work which she rewrote a dozen years later and greatly improved. Miss Barrett continued to write, publishing a poem occasionally in some magazine. In 1838 a volume appeared entitled *The Seraphim and Other Poems,* which received much praise and some censure from the critics.

About this time her health failed. She had always been delicate and now a warmer climate was recommended as her only escape from an affection of the lungs. Her brother Edward took her to Torquay, but his accidental drowning while there was so great a shock to her nervous system that she was utterly prostrated. For a number of years she lived in seclusion in her father's house, a confirmed invalid. In spite of her weakness and suffering she continued her literary work. In 1844 she published two volumes of poetry containing some of her most popular work. In one of these, *Lady Geraldine's Courtship,* she made complimentary allusion to the poet Browning. This led to an acquaintance between the two poets and to their marriage in 1846. Mr. Barrett was bitterly opposed to the marriage of any of his children. Miss Barrett, at this time a woman of mature years, naturally decided the question for herself. To her great sorrow a complete reconciliation with her

father was never effected. Mr. and Mrs. Browning went to Italy soon after their marriage and made their home in Florence until Mrs. Browning's death. Her *Sonnets from the Portuguese* were published soon after her marriage. They are a series of love letters written during her engagement and are considered the finest sonnets of the sort in the English language. Her health was feeble; but Browning, unlike too many poets, was assiduous and unremitting in his care of her. Their life together was a happy one. Mrs. Browning's death occurred before her husband had attained public recognition as a man of genius. In 1856 appeared *Aurora Leigh,* a novel in verse. It is autobiographical, not so far as the incidents of the story are concerned, but in the account of the development of the heroine's mind and character. In a way, it reminds one of Tennyson's *Princess.* It is Mrs. Browning's most ambitious attempt and ranks next to, but far below, the *Sonnets. The Cry of the Children* is an eloquent protest against the employment of little children in British factories,—the piling up of national wealth by child labor. *Lady Geraldine's Courtship* is perhaps her most popular poem.

Mrs. Browning's work is very uneven. She seems to have written on sudden inspiration and to have spent little time in polishing and perfecting her work. The inspirations, however, were sufficiently frequent and powerful to win for her the reputation she has ever since retained of the greatest woman poet who has written in the English language.

SAYINGS.

Knowledge by suffering entereth,
And life is perfected by death.

God answers sharp and sudden on some prayers,
And thrusts the thing we have prayed for in our face,
A gauntlet with a gift in 't.

But the child's sob in the silence curses deeper
Than the strong man in his wrath.

Poetry has been as serious a thing to me as life itself; and life has been a very serious thing. I never mistook pleasure for the final cause of poetry, nor leisure for the hour of the poet.

SAID OF MRS. BROWNING.

In fervor, melodiousness, and splendor of genius, Mrs. Browning stands first among women. —Bayne.

Her genius was more dramatic than idyllic, and lyric first of all.—Stedman.

No writer has exerted a better, gentler, happier influence.—Chambers.

The most eminent poet among women is Elizabeth Barrett Browning.—Shaw.

A woman—an inspired singer, if there ever was one—all fire and air, her song and soul alike devoted to liberty, aspiration and ethereal love.—Stedman.

She felt for all who are in any way crushed or bruised by the pressure of society.—*Britannica.*

Browning, Robert (1812-1889), an English poet. He was born May 7, 1812, at Camberwell, a suburb of London. His father was a clerk in the Bank of England, with a decided turn for books and writing. Robert was educated chiefly at home and in the University of London. His people were not in accord with the theological views of Oxford or Cambridge. He grew up with the idea that much in society is not right, owing, as he thought, to the prevalence of low ideals. He appears to have lived in an atmosphere of art and to have believed that true art would supply the ideals wanting, and that art is not art that does not uplift. He was associated with a number of writers having the same aim, that of overcoming the insincerity and selfishness of society. When Wordsworth, one of these friends, accepted the position of Poet Laureate in 1843, Browning felt deserted and wrote *The Lost Leader:*

Just for a handful of silver he left us,
Just for a riband to stick in his coat.

In 1846 Browning married Elizabeth Barrett. They went to Florence, Italy, to live, though they traveled back and forth frequently, attending to their publishing interests. Mrs. Browning writes of a delightful two days' visit from Tennyson, while all were in London for a few days.

Browning's first poems to attract attention were *Pauline,* published in 1833, and *Paracelsus* the year after. *Strafford, Sordello,* and *A Blot in the 'Scutcheon,* were produced for the London stage. *The*

Ring and the Book, Red-Cotton Night-Cap Country, Ferishtah's Fancies, and *Asolando* are other titles. Browning's works thus far mentioned are hard reading. He has a trick of omitting relatives and infinitive signs, and of jumping abruptly from one thought to another. His allusions are far beyond the knowledge of ordinary readers—many tax the information of the learned. The few who enjoy these poems claim that they make ordinary poetry seem flat and insipid. The harder the shell the sweeter the nut, they would perhaps say.

Fortunately, however, Browning has written a number of delightful lyrics quite suitable for young people. Among these easier poems are *The Pied Piper of Hamelin, How They Brought the Good News from Ghent to Aix, Rabbi Ben Ezra, Abt Vogler,* and *Hervè Riel.*

Mrs. Browning, to whom he was passionately attached, and who had been an invalid before and during their married life, died in 1861. Their only source of kindly difference during fifteen years of wedded happiness is said to have been Mrs. Browning's leanings toward spiritualism, for which he had no liking. Much of Browning's best work was done after her death. Tardy recognition came to him in 1867 through the conferring of honors by Oxford and Cambridge universities. At his death December 12, 1889, Browning's remains were brought home from Venice and interred in Westminster Abbey between Cowley and Chaucer.

The first quotation below is from *Pippa Passes* a delightful poem, the doctrine of which is that a lightsome heart makes the burdens of others lighter. Pippa, a little silk-winder enjoying a rare holiday —one day a year—seems by her gladsome heart to lift the world's burden a little, even by passing along the way:

> The year's at the Spring;
> The day's at the morn;
> Morning's at seven;
> The hill-side's dew pearled;
> The lark's on the wing;
> The snail's on the thorn;
> God's in his heaven—
> All's right with the world.

That low man seeks a little thing to do,
Sees it and does it:
This high man with a great thing to pursue,
Dies ere he knows it.
That low man goes on adding one to one,
His hundreds soon hit;
This high man aiming at a million
Misses an unit.

Then welcome each rebuff
That turns earth's smoothness rough,
Each sting that bids nor sit nor stand, but go!
Progress is
The law of life: man is not Man yet.

Ah, but a man's reach should exceed his grasp,
Or what's a heaven for?

I judge people by what they might be,—not are, nor will be.

> I count life just a stuff
> To try the soul's strength on.

SAID OF BROWNING.

By his contempt of beauty, or inability to surely express it, he fails of that union of art and spiritual power which always characterizes a poet "entirely great."

Since Chaucer was alive and hale
No man hath walked along our roads with step
So active, so inquiring eye, or tongue
So varied in discourse. —Landor.

The man who, more than any other, will make the literature of the nineteenth century speak to the centuries to come.—Wendell.

Brownstone, a reddish brown sandstone formerly popular for the fronts of expensive dwellings in New York City, below Central Park. Its popularity was of short duration, owing to its tendency to split into layers, under the action of frost.

Brown Tail Moth, a moth especially destructive to the foliage of orchard, shade and forest trees. It was accidentally imported from Europe about 1890. The wings and body are white except a brush of brown hair at the tip of the abdomen of the female. The eggs are laid the first three weeks of July and hatch in 15 or 20 days. The caterpillars feed on the outer coating of the leaves. They have a wavy line of white spots on each side of the back with red spots at each end. The barbed hair contains a poison which causes a rash if it comes in contact with the skin. The caterpillars weave thin cocoons in October, from which they emerge late in June. The cocoons should be destroyed during the winter. Spray infested trees with a solution of lead arsenate. See INSECTICIDES; GYPSY MOTH; SPRAYING.

Bruce, Robert (1274-1329), a noted king of Scotland. He is associated in the Scottish mind with the independence of Scotland. He is a grandson of the Robert Bruce who contested the Scottish throne with Baliol. His father, also of the same name, remained in England, and accompanied Edward I to Palestine rather than swear allegiance to the house of Baliol. The subject of this sketch cast his lot with Wallace in the fight for freedom from English domination and, after the death of that hero, became the national leader. He was assisted to this resolution by a quarrel between himself and John Comyn, called the Red Comyn, a nephew of Baliol. Bruce stabbed him in the church of Dumfries, March 27, 1306. Bruce was crowned king at Scone.

War with England followed. At times Bruce was so hard pursued by the English and the adherents of the Baliols, that he was obliged to take to the wildest mountains, woods, and caves. Then, as opportunity came, he would arouse a few followers, sally forth, and strike the English a blow and secrete himself again. Finally he gathered strength, took castle after castle, and in 1314 laid siege to the Castle of Stirling, the last stronghold held by the English. In the battle of Bannockburn, fought with an immense host of English marching to the relief of Stirling, 30,000 Englishmen it is claimed were slain. This is no doubt a gross exaggeration, but the defeat was a decisive one. The independence of the Scots was recognized finally by the English Parliament March 4, 1328. Bruce died suffering, it is said, of leprosy, June 7, 1329. His heart was embalmed and sent to be buried at Jerusalem, but Sir James Douglass entrusted with the mission was killed in a fight with the Moors in Spain. The heart was brought back and buried at Melrose. His body was buried at Dunfermline where in 1818 his bones were discovered.

See WALLACE; BANNOCKBURN.

Bruges, brū'jĕz, a city in the western extremity of Belgium, seven miles from the port of Ostend. In the fourteenth and fifteenth centuries Bruges was the headquarters of the Hanseatic League, and was the busiest commercial city in the world. Its population was rated at 200,000. Its merchant princes vied with royalty. Twenty foreign ministers resided within its walls. The queen of Philip the Fair of France was received in such state that she declared, "There are a hundred here who have more the air of queens than myself." At the height of its prosperity it was the silk and wool and cloth market of the world. Over 50,000 weavers were employed. The Duke of Burgundy instituted the Order of the Golden Fleece in honor of the wool merchants. An unsuccessful insurrection against the Archduke Maximilian in 1488 resulted in harsh measures. Commerce was driven to the rival city of Antwerp; manufactures were driven to England, laying the foundation of the country's superiority in cloth and cutlery. Bruges still has manufactures of silk, linen, cotton, and woolen goods, lace, leather, soap, starch, beverages, bells, and pottery, but the population has fallen to about 50,000.

To one who likes to ponder amid the associations of the past, Bruges is a more interesting city than Brussels. The finest chimes in Europe hang in the town belfry.

In the market-place of Bruges stands the belfry old and brown.
Thrice consumed and thrice rebuilded, still it watches o'er the town.

The wood carvings of the court of justice and the town hall, darkened with age, are unsurpassed. Stained glass, paintings by the masters, towers, spires, and halls where fashion once held revel are on every side. Poets, historians, and thoughtful people find Bruges an interesting city. Longfellow climbed the belfry one morning ere the city was awake:

I beheld the pageants splendid that adorned those days of old;
Stately dames, like queens attended, knights who bore the Fleece of Gold.
Lombard and Venetian merchants with deep-laden argosies;
Ministers from twenty nations; more than royal pomp and ease.

Wordsworth, too, walked about the old market, musing on the changes:

In Bruges town is many a street
Whence busy life hath fled,
Where, without hurry, noiseless feet
The grass-grown pavement tread.

See BELGIUM; ANTWERP; GHENT.

Brunhild. See NIBELUNGEN LIED.

Bruno, brōō'no, **Filippo Giordano** (1548-1600), an Italian philosopher who was burned at Rome as a heretic. He was born at Nola, in the kingdom of Naples, and at an early age entered the order of Dominicans. He expressed doubt as to the doctrines of transubstantiation and the immaculate conception, and in consequence was forced to flee from the convent and later from Italy. He visited Paris, London, and several cities of Germany, lecturing and writing. While in England, under the protection of the French ambassador and enjoying the friendship of Sir Philip Sidney, he wrote his greatest works which are of a metaphysical character, *On the One First Cause* and *On the Infinity of the Universe and of Worlds.* Sixteen years after he left the convent he returned to Italy. In Venice he was arrested by order of the Inquisition and taken to Rome where he was imprisoned. For seven years every effort was made to induce him to recant, but in vain. He suffered death at the stake in the year 1600.

Bruns-wick, formerly a duchy of the German Empire. It is made up of eight distinct parts or districts. The most important part, containing the cities of Brunswick, Wolfenbütel, and Helmstedt, is situated southeast of Hanover. Brunswick includes about 1,424 square miles of territory and has a population of about 485,900, more than a quarter of that number living in the city of Brunswick, the capital of the duchy. The Harz mountain system runs into the southeastern part of Brunswick. The northern part is undulating. Agriculture is the principal occupation of the people, who raise grain, tobacco, flax, and hops. Mining is also an important industry, deposits having been found of iron, copper, lead, and coal. There are manufactures of linen and woolen goods, of leather, paper, and beet sugar.

Brush, an implement composed of a solid back or base, in which are set hairs, bristles, fibers or wire. Brushes are used for a great variety of purposes, such as scrubbing, dusting, smoothing, polishing, and laying on of colors or coating a surface as with varnish or plaster. Brushes are made also in a great variety of shapes and sizes and of many different materials. They are sometimes classified as simple and compound. Simple brushes consist of but one tuft of hair or bristles. The smallest of these are the artists' pencils, as they are called—just a few soft hairs or bristles carefully arranged to form a point in the center of the tuft, which is then inserted in a suitable handle. A compound brush contains more than one, sometimes many tufts of bristles or fibers. These tufts are fastened in the back by means of wire, the wire being concealed by a piece of wood or other ornamental substance which is glued over it. There are in the United States some fifteen hundred establishments for the manufacture of brushes and brooms. The total value of the products is estimated at more than thirteen millions of dollars.

Brussels, the capital of Belgium. It has an inland position fifty miles from the North Sea. It is said to be a miniature edition of Paris. The old walls have been replaced by boulevards, five miles of which are planted with elm and linden trees in four rows, quite encircling the older part of the town. There are fourteen public squares. Sumptuous modern government buildings are disposed about a park of seventeen acres. The city hall, dating from 1401, with a spire 364 feet high, is a noble specimen of Gothic architecture. The Cathedral of St. Gudule was founded in 1010. It is celebrated for its sculpture and paintings, stained glass and pulpit. The presence of the court, a university, museum, art gallery, observatory, a public library of 350,000 volumes, a conservatory of music, a zoölogical and a botanical garden, and several learned societies, make the city a pleasant home for people of means and intelligence. Brussels has long been famous for lace, carpets, and jewelry. Some of the finest lace is valued at $40 a yard. It is a city of many factories, foundries, breweries, and machine shops. Coal and iron

are near at hand. The language spoken by the court is French. Many of the people speak Flemish. The population was before the war about 500,000. The Germans took the city without a siege on August 20, 1914. See BELGIUM.

Brut, a poetical version of the legendary history of Great Britain by Layamon. This work is, in reality, a translation and enlargement of Wace's Norman French poem, *Brut.* Layamon's poem contains 32,000 lines. It was written about 1200, and gives in alliterative verse the history of Britain from the fall of Troy to the year 689. Brut, or Brutus, was supposed to have been the grandson of Ascanius. The story runs that he landed at Totniss in Devonshire, slew the Albion giants, and reigned as king in the island. At his death the kingdom was divided among his three sons. In the opening lines Layamon gives a brief account of himself and his purpose:

An preost wes on leoden,
Layamon wes ihoten.
He was Leouenathe's sone:
Lithe him beo drihte!
He wonede at Ernleye,
At aethelen are chirechen,
Uppon Seuarne stathe:
Sel thar him thuhte,
On fest Radestone,
Ther he bock radde.
Hit com him on mode
And on his mern thonke, etc.

Of the above original we give the following free translation:

A priest was in the land,
Layamon was he hight.
He was Leovenath's son:
Gracious to him be the Lord!
He dwelt at Earnley,
Where are noble churches,
On the Severn's bank:
Well there he thought,
Not far from Radestone,
Where he read books.
It came in mind to him,
And in his chief thought,
That he would of the English
The noble deeds tell:
What they were called,
And whence they came,
Who the English land
First possessed.

The first Englishman who attempts it (turning the Norman French chronicles into English), is Layamon, a monk of Ernely, still fettered in the old idiom, who sometimes happens to rhyme, sometimes fails, altogether barbarous and childish, unable to develop a continuous idea, babbling in little confused and incomplete phrases, after the fashion of the ancient Saxons.—Taine.

Brutus, Lucius Junius, a legendary Roman leader, about 500 B. C. Many stories are related of him. According to the first, he was sent with the two sons of King Tarquin to consult the oracle of Delphi in Greece. Their business done, the oracle was asked, "Which of us shall be king of Rome?" "He that kisses his mother first," was the ready reply. Accordingly when they landed, the two sons of the king sped away, each eager to salute the queen mother first; but Brutus, with more wit, pretended to stumble, and pressed his lips to mother earth. Tarquin, the king, having insulted Lucretia, the peerless wife of an honored citizen, Brutus joined a band of patriots to drive the Tarquins from power. This accomplished, a republic was declared, and he was elected first consul. When Brutus found that his two sons were engaged in a treasonable conspiracy to bring the Tarquins back, he gave orders that the lictors should proceed to do their duty just as though his boys were the sons of a man not in authority. They were accordingly put to death before their father left the Senate chamber. When at length the Tarquins marched upon Rome, Brutus led a body of Roman citizens. He and one of the sons, who in former days visited the oracle, met in personal combat; each plunged his sword into the other. Both fell. The Romans conquered the followers of Tarquin and gave Brutus a magnificent burial.

Brutus, Marcus Junius (85-42 B. C.), a noted Roman citizen. He was a nephew of Cato and a follower of Pompey. After Caesar had overthrown Pompey in the battle of Pharsalia, he received Brutus kindly and made him governor of Cisalpine Gaul, and later of Macedonia. None the less Brutus allowed himself to be drawn into the conspiracy described in Shakespeare's *Julius Caesar,* and even raised his hand to stab his benefactor. No wonder that Caesar, seeing him, cried out. "And you, too, Brutus!" After Antony had aroused the populace to fury, Brutus fled to his former government of Mace-

donia, placed himself at the head of the Roman legion in that province, and joined Cassius in Asia. They were beaten by the forces of Antony and Octavius. Brutus fell on the point of his sword and ended a life that should have turned out far otherwise. In Shakespeare's speech of Brutus to the citizens of Rome we have his own self justification:

If there be any in this assembly, any dear friend of Caesar's, to him I say that Brutus's love for Caesar was no less than his. If then that friend demand why Brutus rose against Caesar, this is my answer: Not that I lov'd Caesar less, but that I lov'd Rome more. Had you rather Caesar were living, and die all slaves, than that Caesar were dead, to live all free men? As Caesar lov'd me, I weep for him; as he was fortunate, I rejoice at it; as he was valiant, I honour him; but as he was ambitious, I slew him. There is tears for his love; joy for his fortune; honour for his valour; and death for his ambition.

See CAESAR.

Bryan, William Jennings, an American statesman and political leader. He was born at Salem, Illinois, March 19, 1860. He was graduated at Jacksonville, 1881, and at the Union College of Law, Chicago, 1883. After four years of practice at Jacksonville he removed to Lincoln, Nebraska. In 1890 he was elected to Congress where he served four years. On his retirement from Congress Mr. Bryan acted as editor of the Omaha *World-Herald*. He was a delegate to the Democratic National Convention at Chicago in 1896. He electrified the convention by an address in which he said:

"No, my friends, that will never be the verdict of our people. Therefore we care not upon what lines the battle is fought. If they say bimetalism is good, but we cannot have it until other nations help us, we reply, that instead of having a gold standard because England has, we will restore bimetalism, and then let England have bimetalism because the United States has it. If they dare to come out in the open field and defend the gold standard as a good thing, we will fight them to the uttermost. Having behind us the producing masses of this nation and the world supported by the commercial interests, the laboring interests and the toilers everywhere, we will answer their demand for a gold standard by saying to them: You shall not press down upon the brow of labor this crown of thorns. You shall not crucify mankind upon a cross of gold."

He was nominated for the presidency on a free silver platform and carried on a remarkable train-end and platform campaign. He was defeated by William McKinley. In 1900 he ran again, but was defeated by Mr. McKinley a second time. Mr. Bryan improved an interval of rest by taking a trip around the world. He wrote articles for a syndicate of newspapers and, on his return, he accepted extensive platform engagements. In 1908 Mr. Bryan ran for the presidency a third time, and was defeated by William Taft. In 1900 he established *The Commoner,* a political weekly devoted to the interests of the common people, as Mr. Bryan interprets those interests. In 1913, Mr. Bryan was appointed Secretary of State. In 1915, due to differences with the President regarding foreign policies, he resigned.

Bryant, William Cullen (1794-1878), an eminent American poet and journalist. He was born at Cummington, Massachusetts, November 3, 1794. He died in New York City, January 12, 1878. The standard life of Bryant is that in two volumes by Godwin. His father was a physician with decidedly literary tastes. His mother was a descendant of John Alden. The son was educated for the law, but did not practice. *Thanatopsis* was written in 1811 and was found in a pigeonhole of an old desk by the father, who was so overcome that he is said to have wept for very joy and pride. When later the editor of the *North American Review* asked Doctor Bryant for something written by his talented son, he sent the manuscript of this poem. It appeared in the September number for 1816. At first literary people refused to believe that any poem so able had been written on this side of the Atlantic, and accused the editor of having allowed himself to be imposed upon. Stoddard says that it is "the greatest poem ever written by so young a man." The success of this and other poems determined Bryant to be a writer. In 1825 he went to New York City, where he founded a paper, but abandoned it for an interest in the *Evening Post* with which he was connected in an editorial capacity during the rest of his life. Among his

more extensive works are translations of the *Iliad* and the *Odyssey*.

The lines, *To a Waterfowl,* were inspired by wild fowl seen winging their way against the sky as he neared a village where he proposed to practice law. No doubt he was weary and lonesome. A number of his poems are favorites with young people. The *Song of Marion's Men, Robert-of-Lincoln, The Fringed Gentian, The Death of the Flowers,* are of this class. Some of his sober pieces, *Thanatopsis* always first, are the *Inscription for the Entrance to a Wood* and *A Forest Hymn*.

His New York life at the age of seventy-seven is thus described by himself: "I rise early . . . about half-past five; in summer half an hour, or even an hour, earlier. Immediately, . . . I begin a series of exercises . . . These are performed with dumb-bells, . . . with a pole, and a light chair swung around my head. After a full hour . . . passed in this manner, I bathe from head to foot. . . . Animal food I never take at breakfast. Tea and coffee I never touch at any time. . . . After breakfast I occupy myself for a while with my studies; and when in town I walk down to the office of the *Evening Post,* nearly three miles distant, and after about three hours return, always walking whatever be the weather or the state of the streets. . . . In the country I dine early, . . . making my dinner mostly of vegetables."

Those who met Bryant considered him a cold, reserved, austere man. In old age he had a remarkably patriarchal appearance. Without a doubt he chafed for the woods and streams of his native state. The following lines from his *Green River* give a glimpse of this desire:

That fairy music I never hear,
Nor gaze on those waters so green and clear,
And mark them winding away from sight,
Darkened with shade or flashing with light,
While o'er them the vine to its thicket clings,
And the Zephyr stoops to freshen his wings,
But I wish that fate had left me free
To wander these quiet haunts with thee,
Till the eating cares of earth should depart,
And the peace of the scene pass into my heart;
And I envy thy stream, as it glides along
Through its beautiful banks in a trance of song.
Though forced to drudge for the dregs of men,
And scrawl strange words with the barbarous pen,
And mingle among the jostling crowd,
Where the sons of strife are subtle and loud—
I often come to this quiet place,
To breathe the airs that ruffle thy face,
And gaze upon thee in silent dream,
For in thy lonely and lovely stream
An image of that calm life appears
That won my heart in my greener years.

OTHER QUOTATIONS.

Go forth under the open sky, and list
To Nature's teachings.

All that tread
The globe are but a handful to the tribes
That slumber in its bosom.

The groves were God's first temples.

The melancholy days are come, the saddest of the year.

Truth crushed to earth shall rise again.

SAID OF BRYANT.

His poetry overflows with natural religion—with what Wordsworth calls "the religion of the woods."—Christopher North.

One remarked at once the exceeding gentleness of his manner, and a rare sweetness in the tone of his voice, as well as an extraordinary purity in his selection and pronunciation of English.—Parke Godwin.

We saw in his life the simple dignity which we associate with the old republics. So Lycurgus may have ruled in Sparta, so Cato may have walked in Rome—an uncrowned regality in that venerable head.—George William Curtis.

His name will endure as that of the poet who first gave large utterance to the voice of Nature in the New World.—W. C. Bronson.

Bryn Mawr, brĭn-mär′, a college for women at Byrn Mawr, Pennsylvania. It was founded in 1880 by Joseph W. Taylor. There are about fifty instructors and four hundred fifty students. The requirements for admission are high, and the scholarship of its graduates is of a high grade.

Bryce, brīs, **James** (1838-1913), a British historian and statesman. He was born at Belfast. His father was a Glasgow schoolmaster held in high repute for his scientific attainments. Young Bryce was educated in the high school at Glasgow and in the university of that city. Later, he was graduated with honors at Trinity College, Oxford. For a time he turned his attention to law, residing in Lincoln's Inn, London. From 1870 until 1893 he was Regius Professor of civil law at Oxford. In 1880 he entered Parliament, identifying himself with the Liberal par-

ty and the principle of home rule for Ireland. He has written several historical works. He is known best in America as the author of *The Holy Roman Empire,* and particularly of *The American Commonwealth.* The latter is the best exposition of our system of popular government that has yet appeared. It is in fact a monumental work, intelligent, sympathetic, full of courage and plain speaking. In 1905 Mr. Bryce became a member of the British cabinet. In 1908 he was sent to Washington as an ambassador from the Court of St. James.

One may doubt if such a living picture of Democracy in all its ways, in its strength and its weakness, its dangers and its future, in all its strange nakedness of appearance, and its amazing vitality and force, in its golden hopes, and its simplicity and limitations as of a raw, lucky, inexperienced youth entering on a matchless inheritance for good or for evil, has ever yet been drawn by a competent hand.—Frederic Harrison in *Bryce's American Commonwealth.*

Bubonic Plague, an eastern epidemic, first known in China. It is supposed to be the same as the Black Death which appeared at Constantinople in 543 A. D., and which carried off a fourth of the population of Europe, 1347-52. It is due to the marvelously rapid growth of colonies of bacteria in the lymphatic system. The particular germ, or bubonic bacillus, resembles that of chicken-pox. Within three or four days from the time that germs have entered, usually in food or water, the plague breaks out in swellings and purple spots in the lymphatic glands of the neck, armpits, groin, and elsewhere, accompanied by headache, dizziness, fever, and prostration. Death is likely to ensue within five hours. After forty-eight hours the chances of recovery increase. As in the case of typhoid fever the bubonic bacteria thrive in filth of all kinds and the plague is most severe in the slums; but even the most sanitary districts are endangered by plague-breeding districts. It is chiefly an epidemic of the city. Clean streets, prompt disposition of garbage, and an abundance of water for flushing and thorough drainage,—that is to say, air, light, and cleanliness,—are preventives. Hot, dry air kills the germs; moist, warm filth favors multiplication. Famine stricken people lack strength to withstand the disease.

At the present time the thickly populated quarters of the dirty, underfed poor in the cities of China and India are the centers of the pest most to be dreaded. The utmost precautions are taken at all enlightened seaports to prevent the landing of persons, animals, baggage, or articles of merchandise from a suspected locality without first holding the ship in quarantine to see whether the plague may not break out. Special efforts are made to prevent rats from swimming ashore from infected vessels, lest they carry germs into the houses and sewers of a city. Every ship approaching a port, especially a ship from Asia, must satisfy the health officers that it does not carry infectious diseases. It is not supposed that the bubonic plague can ever gain a permanent foothold in America. It has at times reached the harbor of New York. In 1900 it appeared in the Chinese quarters of San Francisco.

The United States authorities who guard our ports say that the bubonic plague is a question of germs, rats, fleas, and men. The bacillus or germ, which is described as a spindle-shaped rod, breeds in the blood of rats. Without rats, a port will not have the plague. A person may inhale the germs, in which case pneumonia is likely to ensue with deadly results. If the germ get into the blood current, poisoning results and death is almost certain. The two types mentioned, however, are of infrequent occurrence in this country. The ordinary line of bubonic attack lies through the skin, and here is where the flea plays a part. Fleas abound in the fur of rats. They live on the contaminated blood of the rat. The flea that infests the rats is not averse to the body of man. Here he makes an incision and helps himself to human blood. While feeding, the flea, like the fly, deposits a "speck," disgustingly full of bubonic germs drawn in at previous meals, on the body of the rat. When the victim attempts to allay the itching caused by the flea bite, this speck, germs and all, is rubbed into the

incision, and the germs are taken up by the lymphatic system. They are killed by the lymph, but are carried to the nearest lymphatic gland, where they cause inflammation and a swelling or bubo, from which the plague takes its name. This is the least dangerous of the forms of infection; yet seventy-five per cent of the patients die. A crusade has been inaugurated the world over to exterminate the rats in our large harbors.

See BLACK DEATH.

Buccaneers, bŭk-kà-nērz,′ Central American freebooters. The name is applied to various lawless bands of English and French pirates who haunted the islands of the Caribbean Sea. Their exact number cannot be stated for any particular time. They possessed ships and were well armed. They raided and plundered settlements, pillaged cities, captured merchantmen, and took treasure ships. Their depredations began about 1525 and continued until the beginning of the eighteenth century. They appear to have originated in the desire of the French and English to drive the Spanish shipping out of the Caribbean. English ports were open to them for the sale of Spanish prizes and later they grew so bold and so strong that even the English flag offered a ship no protection from their lawless acts of piracy. At their height they were organized into a sort of piratical republic with a code of laws. They roamed the seas in large bands, dividing their plunder according to fixed rules. The fierce Frenchman, Montbars, and the Welshman, Henry Morgan, were among their famous leaders. The cities of Vera Cruz and Cartagena were among the cities plundered. San Domingo was the center of the French buccaneers; Jamaica of the English.

Bucephalus, bū-sef′a-lus, the favorite warhorse of Alexander the Great. The word is Greek, meaning literally oxhead. When a youth, Alexander won great credit by breaking Bucephalus to ride. He was a colt of unusual spirit, but was afraid of his own shadow,—a fact which Alexander was the first to notice. Alexander kept his head toward the sun. He rode Bucephalus during his Persian campaigns. When the horse died on the banks of the Hydaspes in India, Alexander raised a pillar in his memory and named a military post in the vicinity Bucephalia. See ALEXANDER THE GREAT.

Buchanan, James (1791-1868), the fifteenth president of the United States. Born at Stony Batter, Pennsylvania, April 22, 1791; died at Lancaster, Pennsylvania, June 1, 1868. He was of Irish parentage and was educated at Dickinson College. He was admitted to the bar in 1812. In politics he was a pro-slavery Democrat. In 1814 he was sent to the state legislature; in 1821 to Congress; in 1831 to Russia to negotiate a commercial treaty; and in 1833 to the United States Senate. In 1845 he was made secretary of state under President Polk; in 1853 he was sent as ambassador to London. In 1856 he was elected to the presidency by the Democrats, defeating Frémont by a large majority. Whatever of reputation as a man of affairs he had gained during all these years of office-holding was lost by a vacillating policy when the Civil War broke out. He held that, while the states had no right to leave the Union, the government had no right to interfere. After Lincoln's inauguration, however, he was loyal to the new administration. No one ever questioned Buchanan's honesty or patriotism; but his reputation is far from that of a strenuous man. In 1866 he published *Mr. Buchanan's Administration,* a defense of his policy while president.

Buchanan was the first and only native of Pennsylvania to attain the presidency. The old Buchanan cabin still stands at Stony Batter, high up in the Blue Ridge Mountains. Near by stands a unique monument to mark the birthplace. It is pyramidal in shape, thirty-one feet in height, and thirty-eight feet square at the base. The body of the monument is composed of rough native stones weather-marked, and many of them covered with moss. They are set in cement, of which more than four carloads were used. The inscription-plate and seat are of hammered granite. President Buchanan's tomb is to be seen in the old churchyard of Wheatland near Lancaster.

Buckeye, the sweet horse-chestnut. It is a fine tall forest tree of the soapberry family, akin to the maple and box elder. The leaf resembles that of the chestnut. The fruit is a leathery pod containing a large seed, or rather nut, with a shiny coat and a round, pale scar. The nut resembles the soft, lustrous eye of the Virginia deer, whence the name. The buckeye is found in rich woods from the Ohio Valley southward. Ohio has been nicknamed the "Buckeye State." In addition to the Ohio buckeye, there are others, as the red buckeye, the shrubby sweet buckeye, and the white buckeye of the mountains. There are several similar species in Asia.

Buckingham, George Villiers, Duke of (1592-1628), a British court favorite. He was a native of Leicestershire. He came of an old Norman family and was educated, especially in the manual of arms, in France. James I made him a companion of his son, afterward Charles I, and promoted him rapidly. In two years' time he rose to be knight, gentleman of the bedchamber, baron, viscount, marquis of Buckingham, and lord high admiral. Through his influence with the king and the heir he became the power behind the throne. Social standing, appointment to office, pensions, and preferments of all kinds were dependent on this conscienceless scamp, much to the distaste of the nation. He was graceful in person and could be affable or insolent in bearing,—a hypocrite or a profligate in practice, as suited his ends. For a picture of the audacious Steenie, as he was affectionately called by King James, the reader is referred to Scott's *The Fortunes of Nigel.* Buckingham traveled in disguise with Charles, and intrigued in the arrangements for his marriage with the Princess Henrietta Maria of France. During the wars that followed with France and Spain he proved his own incapacity for public office. He was assassinated by a lieutenant of the army. His son of the same name came into public notice in the reign of Charles II, and lived a life even more shameless than that of the father. Names more unworthy or worthless are not found in the pages of English history. The site of the city home of the family is now occupied by Buckingham Palace, the London residence of the king. It is an imposing, three-story structure, with long wings. It has a frontage of 360 feet on St. James Park. There are the usual throne room, where young ladies are presented, state rooms, galleries, and private apartments.

Buckle, Henry Thomas (1821-1862), an English writer. He inherited sufficient property from his father, a wealthy London merchant, to enable him to carry out his own views of life. He was a man of scholarly habits and of feeble health. He conceived the plan of writing a *History of Civilization,* two volumes of which were completed before his early death. He took issue with the current view that nations rise and fall according to the arbitrary will of Providence. He claimed that climate, soil, food, and the physical nature of a country are the causes that lie at the beginning of civilization; and that, as civilization advances, men become less and less dependent on nature and more and more reliant upon inherited knowledge and mental ability. He also thought that the efforts of any one person are insignificant, compared with the natural trend of national events. Alexander the Great, for instance, was only an instrument in carrying into effect the natural superiority of the Grecian over the Persian civilization. The Greeks would have overrun western Asia sooner or later whether Alexander had lived or not. In like manner he would have said that the American Revolution was a natural conflict of ideas, and that the American ideas were bound to prevail on the American continent whether George Washington and Sam Adams and Patrick Henry had ever lived or not. Other views of almost equal importance have had a profound effect on writers of history ever since his day.

Buckram, a coarse, heavily sized linen or cotton fabric. It is used for stiffening collars, belts, and certain portions of men's garments. A light weight buckram is used in bookbinding, and for covering carriage cushions. During the Middle

Ages a costly linen fabric, used for church vestments and banners, and to a lesser extent for personal wear, was called buckram.

Buckskin, the dressed hide of a deer. The American Indians were expert in dressing the skin, especially of the Virginia red deer. The green hide was stretched by poles, cleaned of fat and flesh and rubbed with the brains of the deer itself. Buckskin was used for moccasins, leggings, and other articles of clothing not only by the Indians, but by the early settlers as well. The provincial troops were sometimes called "buckskins" on account of their clothing, a custom to which Burns refers humorously in a poem on the American Revolution:

> Cornwallis fought as lang's he dought,
> An did the Buckskins claw, man.

See DEER; LEATHER.

Buckwheat, a cultivated grain related to the smartweeds and belonging to the Polygonaceae or buckwheat family. The Saracens are supposed to have brought it from Asia into Europe by way of Spain. It went for a time by the name of Saracen wheat; but the seed is so strikingly like the nuts of a beech tree that people of England gave it the name of beechwheat or buck-wheat. A similar name prevails among the Germans. There are two or three wild buckwheats, or, at least, near relatives, in America. One introduced from Europe is a troublesome vine in stubblefields. Buckwheat is not one of the extensive crops, but its cultivation is nevertheless quite general in this country and Europe. It is easily raised. It is as tender to frost as a tomato plant, but requires so short a growing season that it may be raised north of the Great Lakes. Buckwheat gains a footing in soil too poor for corn or wheat. It makes excellent fodder. It remains in constant bloom until cut down by frost. For this reason it is planted by many for the benefit of bees, but the honey is dark, and has a strong taste as compared with that made from the flowers of basswood and clover. Standing buckwheat is excellent food for poultry at large, and is quite as desirable when fed in the winter. It is not desirable feed for stock; but buckwheat flour, especially in cold weather, is regarded as indispensable for griddle cakes. Twenty-five states, all north of the Gulf States and east of the great plains, report a total annual production of 15,000,000 bushels of buckwheat. New York and Pennsylvania raise over two-thirds of the total amount; Michigan comes third; Maine fourth. See CEREALS.

Budapest, bōō′dō-pĕst, the capital and largest city of the Hungarian Republic. It is situated on the Danube about 135 miles below Vienna. The city took its present name in 1873 from the union of Buda, lying on the west bank, and Pesth, on the east bank. Buda rests on cliffs; Pesth on a plain. The parts of the city are united by a fine suspension bridge, the last on the Danube. Quays second only to those of London extend along the Danube for three miles. Old Buda was a Roman outpost as early as 150 A. D. There are old fortifications, mosques, and monuments commemorative of centuries of contests with the Turks; but Budapest, like its name, is a modern city rising on the ruins of the past. Steamboat landings, warehouses, railway stations, broad, busy streets, parliament houses, and departmental government buildings, a wide-awake university, an academy of sciences, hotels, and modern store buildings, indicate a thriving commercial and administrative city. The population in 1910 was 880,371, comparable with that of Glasgow. Budapest is noted for its electric works. Many of the devices connected with electric lighting, motors, and trolley lines were invented here. There are large manufactures of brass and copper wire, gold and silver plate, iron, wood, and machinery. It is one of the world's great grain markets, and rivals Minneapolis as a milling center. The roller process, a method of crushing grain between steel rollers instead of grinding between millstones, is a Hungarian invention. See HUNGARY; AUSTRIA-HUNGARY.

Buddha, bōō′dä, the founder of Buddhism. The name Buddha means "the enlightened," and is in reality a generic term denoting a deified teacher. Buddhists claim

that many Buddhas have lived and taught. The one to whom the name came to be applied specifically, because of his great work as a reformer, was named in reality Siddhartha Gautama. He is supposed to have been born about five hundred fifty years before Christ. We have little knowledge of his life which can be called historical, but with the few facts are interwoven many traditions faithfully believed by Buddhists. He was the son of a Hindu prince who lived a short distance north of Benares, India. He was born in a pleasant garden by the river side, while his mother was on a journey to the home of her father. Many stories are told of the miracles attending his birth, of the prophecies pronounced when his father first looked upon the child, and of how, as the mother continued her journey, the baby was protected from the heat of the sun by cool shadows which moved above his head.

Siddhartha grew to be a handsome and intelligent youth, but too thoughtful to suit his parents' ideas of a happy prince. They therefore married him at an early age to his young cousin, the beautiful daughter of a neighboring king or raja. It appears that the young man now went to the other extreme; for we read of his relatives complaining to his father that he lived for pleasure only, and would be incapable of leading an army, should war arise. Gautama, hearing of this, appointed a day when his prowess should be tested At this trial the young man proved himself superior, not only in manly exercises, but in knowledge, to all competitors. Complaints ceased, and Gautama pursued his own course. In the midst of his pleasures, however, he observed many things which made him ponder deeply. He saw a man bent with age. Asking Channa, his charioteer, why such things should be, he was told that age is the common fate of all. He saw a man afflicted with a loathsome disease, and Channa told him that all must suffer. He saw a corpse, and learned that all must die. Pondering these things, and striving to solve the mysteries of life and death, Gautama at last left his family and lived for years as a recluse. For some time he practiced the most severe penances and self-denial, but he learned the uselessness of such practices, and finally, while sitting under the "Bo-tree," known from that time as the tree of wisdom, he became "enlightened." When he had thus evolved a system of religious beliefs and a code of morality satisfying to his own mind, he began to teach his doctrines and soon made many converts.

There is an old Buddhist hymn which relates how an acquaintance met Buddha as he started out with the joy of his new religion shining in his face, and asked him where he was going. His answer was, "I am going to the city of Benares to establish the kingdom of righteousness, to give light to those enshrouded in darkness, and open the gate of immortality to men."

Buddha made it his custom to gather his disciples about him for instruction during the rainy season. When that was past, they separated for the purpose of spreading the new doctrines. According to tradition Buddha lived to be almost eighty years of age, continuing to teach until the end. His last words were spoken to his faithful disciples.

Buddhism, bo͞od'dĭzm, a form of religious belief. The name is from Buddha, a word meaning teacher. Buddhism may be regarded as a reformed Brahminism. Clarke, in his *Ten Great Religions,* calls the Buddhists the Protestants of the East. Buddha began his teaching at Benares, India; but his followers appear to have been driven from Hindustan at a later period. Brahminism, however, acknowledges a trinity, while Buddhism does not recognize any supreme being. Buddhism rejects also the castes of Brahminism. Any one may become a Buddhist priest, but the priest is only a monk; for in this religion there are neither sacraments to administer nor rites to perform. The four "sublime verities" which lie at the foundation of the religion of Buddha are:

1. Pain is inseparable from existence.
2. Pain is the offspring of desire.
3. Existence can only cease with Nirvana.
4. Nirvana may be attained only through the extinction of desire.

The Buddhist religion accepts the Brahminical theory of the transmigration of souls. According to this theory, gross, that is to say, ordinary souls are born over and over, and are thus required to pass repeatedly through a world of birth, sin, suffering, and death. After the purification of countless existences the soul may be absorbed at last into Nirvana the Blest, a state where all desire is extinct. Buddha himself was believed to have passed through every possible form of existence before he became "the Enlightened."

The extinction of desire, which leads into the "path" to Nirvana, is acquired by the fulfillment of eight conditions. These are right view, right judgment, right language, right purpose, right practice, right obedience, right memory, and right meditation. Five precepts to be obeyed forbid man to kill, to lie, to steal, to commit adultery, and to fall into drunkenness. The virtues to be cultivated are charity, purity, patience, courage, contemplation, and knowledge. If acquired in this life, these virtues lead to a painless existence in the next life. As a mere ethical code Buddhism ranks second to Christianity. It is a mild code of morals, abhorrent of cruelty. The Brahminical practices of infanticide and burning of widows on their husbands' funeral pyres were forbidden by Buddhism.

The theological beliefs of the Buddhist form a collection of 108 volumes, which are believed to date from about 200 B. C. Much space is occupied with accounts of the previous existences of Buddha; for when he became "the Enlightened," he was able to remember all his former experiences.

The Buddhists held exclusive sway in Ceylon, Siam, Burma, Nepal, Java, Indo-China, and Tibet. They have followers in India, in China, and in Japan. There are in all about 148,000,000 Buddhists. As many more profess a semi-buddhist belief. Although the Buddhist nations are decadent, they have been great builders. Their shrines, towers, topes, and cave temples form a prominent chapter in the history of oriental architecture.

There is a remarkable statue of Buddha near Yokohama, Japan. It represents the founder of the religion as seated, tailor-fashion. The sitting figure is "as tall as a four-story house." It is made of bronze plates, fitted together so neatly that the joints cannot be seen. The brow wears a coronet, apparently of jewels. The eyes are of gold, and are a yard wide. It must be remembered that in theory Buddha is not a god to be worshiped, but an ideal of what any man may become. It is probable, however, that to the ignorant this distinction is of little weight, and that Buddhism is simple idolatry.

See INDIA; BUDDHA.

Budding. See GRAFTING.

Budget, a bag or package of miscellaneous articles, as a budget of old clothes or a budget of news. In the history of England the budget is an annual statement of finances read by the chancellor of the exchequer before the House of Commons. It contains a statement of expenses necessary for the coming year, and proposes a scale of taxation to provide the means. Sometimes the chancellor is able to propose a reduction of taxation in certain directions, and sometimes he is under the grave necessity of proposing extraordinary expenditure and grievous taxation. The term is coming into general use in discussing the finances of any nation. The amount of annual expenditure is given in statistics accompanying the countries of importance.

Buell, Don Carlos (1818-1898), an American soldier. He was a native of Ohio, received his education at West Point, served in the Seminole and Mexican Wars, and attained the rank of adjutant-general in the regular army. When the Civil War broke out he was appointed brigadier-general of volunteers. He succeeded Sherman in the department of the Cumberland, and his troops helped save the day for General Grant at Shiloh. In 1862 he assumed command of the Army of the Ohio, and began a campaign in Kentucky and Tennessee. October 8, a battle was fought at Perryville, Kentucky, in which General Buell drove General Bragg from the field. Buell was severely criticised for allowing Bragg to escape. He was at once removed from command and from November of

that year until the following May was before a military commission appointed to investigate the campaign. The report of the commission was never published in full, but it was in the main unfavorable to Buell, who in consequence refused any assignments, although several were offered him. The general opinion of critics seems to be that General Buell lacked tact in dealing with subordinates and that he was somewhat dilatory in situations requiring prompt and decisive action, but that in the main he was an able officer and a good strategist.

Buenos Ayres, bō′nŭs ā′rĭz, the capital of Argentina. It is the largest Spanish-speaking city,—the largest Catholic city,—in the world. It is the largest city in the world south of the equator. The name is Spanish, signifying good air. The city is beautifully situated on the wide estuary of the La Plata and has public wharves extending three miles along the water front. They cost not less than $25,000,000. There are 300 miles of street railways, both horse and electric, fine streets, and public parks. Of a population estimated at 1,360,406 in 1912, 200,000 are foreigners. A city hall, arsenal, government mint, large churches, theaters, cathedral, museum of natural history, parks, and libraries give the city quite a Parisian appearance, while the atmosphere of bustle and activity is more American than Spanish. There are enormous warehouses for wool, built like train sheds. Ocean freights are low. It costs only about a cent to send wool enough across the Atlantic to London to make a suit. Fondness for amusement is noticeable. American residents speak of a wonderful spirit of public liberality shown by citizens. One of the daily newspapers has erected a costly building, an ornament to the city, and has set apart a portion for the public. A share of the revenue of the paper is devoted to the maintenance of a free library, a museum of natural history, an office for free legal advice, an office for free medical service with six physicians in attendance, rooms for literary and social clubs, and, what seems strangest of all, elegantly furnished apartments for the reception of distinguished visitors from abroad. With waterworks and sewerage the city has a low death rate and is in many respects a model for the imitation of North American cities. See ARGENTINA.

Buffalo, the principal lake port of western New York. It is situated on Lake Erie, at the western terminus of the Erie Canal, and is the point of departure from the Great Lakes for the Mohawk Valley. There are 250 passenger trains a day, and nobody knows how many freights. Western produce on its way to New York City leaves Lake Erie at this point. Immense elevators and docks are prepared to receive grain, coal, iron ore, and lumber from train or boat. One hundred and fifty million bushels of grain and 14,000,000 barrels of flour are an ordinary year's business in these two staples. The greatest coal dock and the largest grain elevator in the world are here. In fact, the grain elevator is a Buffalo invention to save men from carrying grain in sacks or hoisting it with tackle. The traffic of Lake Superior is largely with Buffalo. Heavy freight, such as coal and salt, nails and sugar, destined for Minnesota, Manitoba, the Dakotas, or the region westward, takes boat at Buffalo. The mouth of a small creek has been enlarged by breakwaters and canals at an expense of millions of dollars to accommodate the traffic.

Niagara Falls are only twenty miles away, and furnish electric power for manufacturing purposes. Natural gas reaches the city through mains from the gas fields. There are numerous manufactures. Statistics of meatpacking, hardware, linseed oil, beer, sash and doors, ready-made clothing, flour, furniture, soap, candy, and leather run into millions. There are $45,000,000 on deposit in savings banks.

The first white child was born here in 1797. The town was laid out in 1804. The village was destroyed by the British in the War of 1812. The census of 1920 gave a population of 506,775, Buffalo thus ranking twelfth in the Union. See NIAGARA.

Buffalo, an animal of the ox kind, native to Africa and southern Asia. It has no hump on its shoulder. The name has

been applied unfortunately to the American bison, for an account of which the reader is referred to an article under that name. There are three distinct species of true buffaloes. A chestnut colored species ranges throughout central and western Africa. A bluish black, nearly hairless species, known as the cape buffalo, ranges from South Africa to Abyssinia. Its enormous horns are joined at the base. They lop down and backward towards the ears, but curve forward and inward over the forehead again, making a complete shield of defense for the head. This animal is attended regularly by the buffalo bird, which lives on parasites picked from the thick hide of the buffalo, for which it renders compensation by sounding the alarm if an enemy, that is to say, a lion or a man, is seen in the vicinity. If the buffalo should be asleep and not heed the cry of its little sentinel, the faithful bird, it is said, thrusts its bill down and picks its host's ear, and thus awakens it, when they dash off together to a place of safety.

The third species is the black buffalo of India. It has long, triangular horns, which curve backward toward its shoulders. These horns are much flattened, and are surrounded with wrinkles, much like those of an ox. In its native home in the jungles it is considered a dangerous animal, as it has an ugly habit of charging upon hunters with the utmost recklessness. It has been widely domesticated, and is used by the peasants of Egypt and India much as domestic cattle are with us.

The buffalo is the principal beast of burden in the Philippines, also. It is used to plow, to draw carts, and for a great variety of similar purposes. The buffalo is able to work in swampy ground, where horses and ordinary oxen cannot travel. If allowed to bathe occasionally in mud and water, it is able to endure an unusual degree of heat. It lives on the coarsest forage. The buffalo cow yields milk. Both the cow and the ox are valuable for food and for their hides. The Asiatic buffalo is as indispensable to the peasant farmers in swampy lands of tropical countries as the reindeer, the yak, and the camel are to other localities.

Travelers in the Philippines say that the the buffalo is to the Filipino peasant what the mule is to the southern darkey. The buffalo drags the peasant's wooden plow through the mire of the rice swamps, lives on the roughest forage, yields milk for the family, is fondled by the children, and is a patient domestic companion. White people are regarded with distrust. The white man who comes around a turn in the road, and is discovered by buffaloes wallowing with their calves in a pond or stream, must be on the lookout lest he be charged at full speed by the alarmed animals.

DISTRIBUTION OF DOMESTIC BUFFALOES.

Hungary	133,000
Bulgaria	431,487
Italy	19,362
Roumania	43,475
Servia	7,710
British India	15,134,501
Cochin China	241,750
Dutch East India	2,633,533
Formosa	226,620
Philippine Islands	640,871
Asiatic Russia	338,042
Siam	1,444,478
Egypt	300,000
Total	21,294,000

Buffalo, American. See BISON.

Buffalo Bill. See CODY, WILLIAM FREDERICK.

Buffalo Grass, a North American grass highly valued in the West for fodder. It is a low, strong-growing grass, spreading rapidly by runners, the blades becoming curly and crisp when burned by the summer sun. It is well adapted for regions of scanty rainfall, and possesses nutritious qualities acceptable to all stock. The name Buffalo grass has been given this grass because it once formed an important part of the food of the buffalo.

Buffon, George Louis Leclerc (1707-1788), a celebrated French naturalist. Educated at Dijon for the law, but permitted by an intelligent father to follow his inclination for natural history. After traveling in England and Italy, Buffon was admitted to membership in the Academy, a French learned society, and, later, was appointed to a position in the royal garden and museum. Buffon conceived the project of a *Natural History*

Yak.

Cape buffalo.

Gayal or East Indian ox.

THE BUFFALO FAMILY.

in French which should popularize the science. In this he succeeded. His history passed through several editions and was translated into foreign languages. Many condensed editions were sold. Buffon's *Natural History* in a single volume, with extended accounts of the cat, dog, and other domestic animals, was a household favorite in England and America fifty years ago. Scientific men have found fault with Buffon for inaccuracy, claiming that he preferred to write brilliantly rather than accurately, and certainly he was an entertaining writer. A complete edition of the *History* in French, 1749-1788, filled thirty-six volumes. His *History of Quadrupeds* is considered the best single part of the work.

Bug, a large sub-order of insects. The term is too often applied to beetles as well. The wing covers of a beetle are horny throughout, and meet in a straight line on the back like edges of a clam shell. The front wings of a bug are hard and horny only part way. The tips are thin or gauzy and overlap when folded. The wings of flies are gauzy throughout. Potato bugs, June bugs, rose bugs, and lady bugs are all beetles. The chinch bug, the squash bug, and the cotton-stainer are true bugs. The bedbug is rightly named. Like other insects, bugs breathe by tubes situated in the sides of the abdomen. The water boatmen that dive like silver bubbles carry air surrounding their bodies. The back-swimmers that float around on their backs carry down a supply of air under their wings. The longlegged, slender, water-striders that dart around each other on the surface of a quiet pool are also bugs. Toad-shaped bugs, shore bugs, assassin bugs, ambush bugs, flat bugs, leaf bugs, red bugs, stilt bugs, stink bugs, lace bugs, and negro bugs are all too numerous for description, and must be studied with a textbook like Comstock's *Manual*. The electric light bug is the largest bug known in America.

Buhl, būl, a sort of inlaid work named for the famous French cabinetmaker of that name, 1642-1732. The term was applied originally to a pattern of highly polished brass, set with care in a surface of some other metal or of wood. It is now applied chiefly to inlaid work in veneer. Two sheets of wood of contrasting colors, as maple and black walnut, are glued together with an intermediate sheet of paper. A pattern, as of an ivy vine, is traced on one surface and cut out with a fine scroll saw running through both woods. The two woods are then split apart through the paper cleavage. If the sawing is true, the two ivy vines may exchange places. The light ivy vine fits into the dark border, and the dark ivy fits into the light border. By gluing the two veneers to wooden backs and finishing, two pieces of inlaid wood, or buhl work are produced. This method is employed by makers of furniture and ornamental woodwork. See FURNITURE.

Buhr, or **Burrstone,** a variety of quartz distinguished by flinty hardness and numerous small air cavities. Buhr of excellent quality is found in the quarries of western Pennsylvania and adjacent parts of Ohio, but the French buhr is by far the best. Cut into wedge-shaped pieces and bound together by heavy metal hoops, buhr is the material of which millstones are made. Before the invention of the steel roller process the flour and meal of the world was ground between upper and nether millstones of buhr. Many millers have not discarded millstones yet. With use, millstones become too smooth to grind and must be roughed by the use of a hammer or pick with a steel edge shaped like that of a chisel. Picking millstones must be done by a uniform tap-tap and is an art in itself. See FLOUR.

Building and Loan Associations, cooperative unions designed to receive the savings of many wage-earning members and loan them to a few members for the building of houses. The system originated in Philadelphia about 1835. It has spread over a large part of the United States, until the various associations are credited with doing not less than $750,000,000 worth of business annually. The gist of the plan and the secret of its success lies in low expenses and the putting of many small savings at interest promptly. On the other hand, the moneys are loaned on good security to be returned, in-

terest and principal, usually in weekly payments running through a term of ten to fourteen years. Though the total amount returned by the borrowing member may not exceed the principal and interest for the entire term at, let us say six per cent per annum, the rate of profit to the association will be at least twice six per cent. In the first place, the borrower returns part of the principal out of his first week's wages, which he can do quite as well as to hold his savings for a large payment. On a fourteen-year plan, he holds only the last installment of principal fourteen years with an average time of seven years. Interest is also paid weekly instead of being held for an annual payment. The wage earner is far more certain of himself in making many small payments than in trying to accumulate for large payments. So, without hardship to the borrower, in fact, while helping him, the non-borrowing members of the association are encouraged to save and receive from three to five times as much interest as savings banks could afford to pay them.

The success of local societies has encouraged the organization of associations that operate over large territory. Many of these from the first have been mere schemes to despoil the depositor. Salaries and other expenses have eaten up all possible dividends, and recklessness in placing loans has caused loss. Others, organized in good faith, have not been successful. In general it may be said that a building and loan association should remain local, and confine its business to loans that may be looked after by a committee of members, or, at most, by a trusted secretary acting under the direction of an executive committee.

There were in the United States in 1917 7,072 building and loan associations, having 3,568,432 members and assets valued at $1,598,528,136.

Bulb, a short and stout underground leafy stem, formed by several plant families, especially the lily family. It consists primarily of a solid, flat, horizontal portion. The under side of this plate produces roots; the upper side is covered with thick, fleshy leaf bases in the center of which may be found a bud from which a new plant is developed. The outermost scales are usually thin and dry, a single scale surrounding the entire bulb; and sometimes the outer scales are fleshy and narrow. The onion is an excellent example of the first,—the coated or tunicated bulb. The bulb of the wood-sorrel is of the other sort. See LILY; NETHERLANDS.

Bulbul, the Persian name of a sweet singing rock thrush heard at night in oriental countries. It is a species of nightingale. It has been brought to notice by the *Arabian Nights' Entertainments,* and by the poems of Moore and Byron. There are several brilliantly colored species. The bulbul of India is familiar in gardens. The males fight with such pugnacity that they are trained by the natives and exhibited in sparring matches. See NIGHTINGALE.

Bulgaria, bŏŏl-gā′rĭ-a, a kingdom of Europe. It is situated on the east bank of the Danube and extends from Jugo-Slavia to the Black Sea. Its area is 38,080 square miles—twice that of Switzerland. The population, 1920 census, was 4,337,513, three times that of Louisiana, New Orleans included. The capital is Sofia.

Bulgaria is a seat of ancient culture. Formerly a part of the Roman Empire, it was occupied by the Slavs. It was the first Slavonic territory to accept Christianity. The Christianity of the Russians was the result of missionary work emanating from this district. The Russian language assumed a fixed literary form here. The earliest Russian books were written in Bulgaria. Latterly the people were corrupted by the infusion of Tartar blood and were degraded by centuries of Turkish domination.

In 1878 Bulgaria, assisted by Russia, established its independence. A nominal tribute was paid to Turkey. In 1885 Eastern Rumelia was "confided" to the prince of Bulgaria and has since been a part of that country. In 1908 Bulgaria asserted entire independence. Progress has been rapid. Legislative authority is vested in a national assembly of one house. Universal manhood suffrage prevails. Any man thirty years old who can read and

write, and who is not a priest or an active soldier, may become a candidate. The national faith is Orthodox Greek, but the church is independent. Freedom of worship prevails. Clergymen of all denominations are paid by the state. They are supported in large measure, however, by fees received for services at weddings, burials, etc.

The country is traversed by the Vienna-Constantinople Railway and has the advantage of navigation on the Danube. Telephone and telegraph lines have been established. A university is maintained at Sofia. The common schools are free. Attendance between the ages of eight and twelve is obligatory.

The surface of Bulgaria varies from mountain to plain. All minerals belong to the state. The people live in villages. The plow land is held, theoretically, by the state. It is leased in small farms of five or six acres, the lease descending from father to son. A rent of one-tenth of the produce is paid by way of taxes. The villages or communes own the pasture and woodland, but pay no taxes. Each villager has grazing and wood-cutting rights. The soil is rich and productive.

Attar of roses, wine, silk, tobacco, carpets, hosiery, and ribbons are exported.

In October, 1912, Bulgaria became allied with Greece, Servia and Montenegro in a war against the Turks. Turkey was practically driven out of Europe by May 30, 1913. Unable to agree on the division of the conquered territory, a second war broke out with Bulgaria opposed against her former allies and Turkey. This was very disastrous to Bulgaria. She lost practically all of the territory which would have fallen to her by the first treaty, Albania was created a new monarchy, Turkey regained part of her former losses, and the borders of most of the Balkan states and Greece were extended. In 1915 Bulgaria joined the "Central Powers" in the War. She hoped in her grasping, brutal militarism to get hold of Servian Macedonia, the control of which had long been the source of quarrel with Servia. The plan was foiled by the Allies, and the fate of Macedonia left to the League of Nations.

So much has been heard lately of the Bulgarians as being in our times the special victims of the Turk that some people may find it strange to hear who the original Bulgarians were. They were a people more or less nearly akin to the Turks, and they came into Europe as barbarian conquerors who were as much dreaded by the nations of Southeastern Europe as the Turks themselves were afterwards. The old Bulgarians were a Turanian people, who settled in a large part of the Southeastern peninsula, in lands which had been already occupied by Slavs. They came in as barbarian conquerors; but, exactly as happened to so many conquerors in western Europe, they were presently assimilated by their Slavonic subjects and neighbors. —**E. A. Freeman,** *The Ottoman Power in Europe.*

Bulkhead, a partition in the hull of a ship. The portion of a ship below the waterline is divided into compartments, usually by water-tight partitions running crosswise and lengthwise. In case a hole is made by running against a rock or by some other accident, the water-tight doors in the partitions surrounding the space through which water is entering are closed tightly, and, though the room may fill with water, the ship suffers little inconvenience. No charge of grosser neglect can be brought against a ship's commander than one of neglecting to close his bulkheads in case of collision at sea. As the front end of a ship is most apt to be stove in, the forward bulkhead is made with especial care and is called the collision bulkhead. The term is applied also to any framework designed to prevent water or quicksand from breaking into a tunnel while the workmen are at work.

Bull, an authoritative document issued by the popes, "usually an open letter containing some decree, order, or decision relating to a matter of grace or justice." The document is sealed with a globular leaden seal or *bulla.* The *bulla* is attached to it by a red or yellow thread, if relating to matters of grace, and by an uncolored strand of hemp, if relating to matters of justice. One side of the *bulla,* somewhat flattened, bears the heads of St. Peter and St. Paul; the other bears the name of the pope. The writing is in Latin on the finest parchment. A papal bull opens with the name of the pope. Thus the form is *"Pius, episcopus, servus servorum Dei, in Domino salutem et apostolicam benedictionem,"*—"Pius, bishop, servant of the servants of God, in the Lord salutation

Entering the Arena

Blindfolded Horse Attacked

Attack of the Picador

The Bull's Last Charge

BULL FIGHTING, in Mexico

and apostolical benediction." The red seal of the pope is attached to the parchment itself. The term "papal bull" is akin to government bulletin. It has no relation to the similar word signifying a blunder. In 1758 an edition of papal bulls and briefs was published in nineteen volumes at Luxembourg. The editing required thirty years. For imperial bulls, see GOLDEN BULL.

Bull, Ole Bornemann (1810-1880), a celebrated Norwegian violinist. A native of Bergen. His father wanted him to study for the ministry and would not permit a musical instrument in the house. At Christiania, 1828, he played in a concert with such skill that he was made music director of the city. After study in Germany and at Paris, Bull traveled, giving concerts. He had an ambition to outdo Paganini in violin tricks; but, though accomplished, could not excel him. Bull was received with tremendous enthusiasm. In 1844-50, 1853, and 1869 he made tours of the United States. Bull made a fortune out of his concerts, but spent a large part of his earnings in an unsuccessful attempt to colonize his countrymen in Pennsylvania, where he bought up 125,000 acres of rough land. See VIOLIN.

Bullard, Robert Lee (1861-), an American soldier, commander of the 2nd army of the American Expeditionary forces in France, in 1918. He was born at Younsboro, Ala., and educated at the Agricultural and Mechanical College of Alabama and at West Point Military Academy. He was colonel of the Third Alabama Volunteers in the Spanish-American War. He was in service under General Pershing in the Philippines, and in 1916, he was with the army in Texas, in connection with the border troubles. In 1917, he was made brigadier-general, then promoted to major-general in the National Army. Bullard accompanied General Pershing to France and in June, 1918, was given command of the Second American Army, with the rank of lieutenant-general during the war.

Bulldog. See DOG.

Bullet, the leaden projectile of small arms. Bullets were originally spherical. It is in this sense that the term bullet-headed is applied to a person with a short, round head. The elongated minie bullet was introducd by the French in 1846, and has been succeeded by still more elongated bullets. The modern bullet of the cartridge for a breech-loader, as of the Mauser, is about three inches long, with a diameter about one-tenth of the length, and a weight of 216 grains. It is usually coated with steel, copper, nickel, or german silver. The dum-dum bullet, condemned by rules of modern warfare, has an unprotected lead point that flattens on striking, and produces a ragged wound.

Bullfighting, a Spanish sport, supposed to be of Greek and Roman origin. It was introduced into Spain by the Moors and became popular throughout Spain and its New World colonies . It is still maintained in some Spanish cities and in Mexico. The fight takes place in an arena surrounded by raised seats for the spectators. The bulls are introduced one at a time. Horsemen called picadores begin the attack by goading the bull with lances and evading his charges as best they may. Later in the game a number of young men enter and further torment the infuriated animal by throwing darts at him. Soon he is carrying scores of arrow-like darts. When the animal has been tortured and goaded to exhaustion, the matador advances and slays him. The dead bull and injured horses are dragged out, and another bull is entered. See SPAIN.

Bullhead. See CATFISH.

Bullion, bul'yŭn, uncoined gold or silver. The coining value of an ounce of pure gold is $20.67183; of silver, $1.2929. In coinage it is customary to take nine hundred parts of pure gold or silver and one hundred parts of copper alloy to give hardness. Bullion thus alloyed is called standard bullion. The world now produces about 15,000,000 ounces of gold bullion and 164,000,000 ounces of silver bullion a year. See GOLD; SILVER; MINT; COIN.

Bull Run, Battle of, the first battle of the Civil War. It occurred Sunday, July 21, 1861. The battlefield is in Virginia, about twenty-five miles west of Washington. The Confederate army un-

der General Beauregard lay at Manassas in position to defend Richmond. The Federal troops under General McDowell advanced to attack them. About 28,000 troops were available on each side. At first victory seemed on the Union side. The Confederates thought they were defeated; but the Union troops lost courage just in time to save their opponents. Demoralization grew into panic; and a retreat, degenerating in many instances into every man for himself, ensued. The Federal army, accompanied by spectators, citizens, and even congressmen, rushed pell mell for the bridges that lead across the Potomac into Washington, and left the corpse-strewn battlefield to the Confederates. Supplies, guns, ammunition, wagons, everything that could be thrown away to lighten flight, was left by the wayside. Something less than 1,000 men were killed in the battle and nearly 3,000 were wounded. The Union loss was, of course, the heavier. At this date the retreat may seem ludicrous; but it was a serious affair at the time and showed that the war was to be no pretense.

A second battle of Bull Run, sometimes called the battle of Manassas, was fought August 29-30, 1862, between the Confederate troops under Lee and the Federal forces under Pope. Lee's forces numbered about 54,000, Pope's 65,000. After two days of stubborn fighting the Federal troops were driven from the field, leaving 10,000 killed and wounded. The Confederate loss was almost as heavy.

Bulwer-Lytton, bool'wer-litton, **Edward George Earle** (1803-1873), an English novelist. He was a native of London. Lytton was his mother's family name, which he appended to his own on inheriting the Lytton estates. He sat in Parliament and, as colonial secretary, became a member of the cabinet. He is credited with liberal views in the setting up of the government of Australia. In 1866 he was raised to the peerage as Baron Lytton. Bulwer produced a few dramas and many novels. His collected writings fill 110 volumes. By far the greater number of his stories belong to that class which Taine calls "the novel of manners." A few are historical and some have psychological and occult themes. Bulwer did not possess a powerful imagination, nor did he have high ideals. There seems, moreover, a lack of human sympathy in his stories. His novels, however, show versatility and great range of power. They are full of incident and present interesting and instructive pictures of contemporary life. *The Last of the Barons, The Last Days of Pompeii,* and *Rienzi* and *Harold* are powerful historical novels that merit place in every well selected library. *The Lady of Lyons* and *Richelieu* are the best of the dramas. Among other novels may be mentioned *Eugene Aram, The Caxtons, Alice, or the Mysteries, Ernest Maltravers,* and *My Novel.*

Bulwer was one of the most industrious literary craftsmen of the Victorian Era.—Nicoll.

QUOTATIONS.

Curses are like young chickens,
And still come home to roost.

Beneath the rule of men entirely great,
The pen is mightier than the sword.

In the lexicon of youth, which fate reserves
For a bright manhood, there is no such word
As "fail."

Bumblebee. See BEE.

Bungalow, the thatched cottage of Bengal, India. The word is of Hindu origin. In point of cost the original bungalow is to be associated with the German hut, the Swiss chalet, the English cottage, the Scotch shieling, and the Irish shanty; but, as a matter of fact, the name is given in India to expensive structures. Bungalow is becoming a familiar word in America also, where it is used as synonymous with cottage. The typical bungalow is but one story high. The eaves spread far out to cover a veranda running quite around the house. The roof may be of any material from thatch to tile. The windows and doors are large. The entire structure is planned to secure plenty of air and room. Protection from insects and rain are the chief considerations. For the convenience of travelers the Indian government maintains "bungalows" at intervals of twelve to fifteen miles along the main traveled roads. They are places of shelter. The traveler is expected to provide his own fare.

Bunker Hill, a low hill 110 feet high in Charlestown, Massachusetts. It is memorable, in connection with Breed's Hill, as the site of the battle of Bunker Hill, June 17, 1775. The Americans under General Prescott fortified the height in a hasty manner and were driven out by the British, but only after a gallant resistance and when their powder failed. The British lost 226 men killed and 828 wounded. The Americans, being behind breastworks except during the retreat, lost 145 killed and 304 wounded. Bunker Hill monument stands on Breed's Hill, as near as may be where Dr. Warren fell. It is a massive granite shaft 31 feet square at the base, 15 feet square at the top, and 220 feet high. Lafayette laid the corner stone, June 17, 1825. Webster delivered the dedicatory oration, June 17, 1843. The monument may be ascended by an interior stairway. The summit commands a magnificent view of Boston and the harbor.

Bunner, Henry Cuyler (1855-1896), an American journalist and author. He was born in Oswego, New York. He began a journalistic career at the age of eighteen. He became the editor of *Puck* shortly after its start and held the position for the rest of his life. Among his writings may be mentioned *A Woman of Honor, The Story of a New York House, The Midge, Short Sixes,* and *The Runaway Browns.* Bunner will be longer remembered, perhaps, and better loved, for some of his tender little poems than for any of his prose. Everybody knows *One, Two, Three,* the story of

An old, old, old, old lady
And a boy that was half-past three.

Bunner excels, too, in certain French forms of poetry, which have become favorites in later years. An example of one of these is the triolet given below. A triolet is limited to eight lines and two rhymes:

A pitcher of mignonette
In a tenement's highest casement;
Queer sort of a flower pot—yet
That pitcher of mignonette
Is a garden of heaven set
To the little sick child in the basement,
The pitcher of mignonette
In the tenement's highest casement.

Bunsen, bŏŏn'sen, **Robert Wilhelm** (1811-1899), an eminent German chemist. He entered the University of Göttingen when he was seventeen years old and devoted himself to the study of zoölogy and chemistry. He later continued his studies at Paris, Berlin, and Vienna. He wrote numerous papers on physics and geology, as well as on chemistry. He invented the magnesium light, which is so important in photography. His greatest discovery was that connected with spectrum analysis. The spectrum is essentially a magnifying lens attached to a glass prism. By means of this instrument, elementary substances, such as sodium, copper, or lead, may be discovered in the sun and stars. Dark lines occur among the colored spaces in the solar spectrum, and Bunsen, together with his friend Kirchhoff, demonstrated the meaning of these lines, first observed by Fraunhofer in 1815. Bunsen's and Kirchhoff's discovery has been of great value to chemistry and to astronomy. Its first result was the discovery of two new metals. Besides being a great discoverer in chemistry, Bunsen was an able teacher. He held a number of important chairs—at Cassel, Marburg, and Breslau. From 1851 to 1889 he was a leading professor at Heidelberg, one of the men who drew a crowd of American students to that celebrated university. The laboratory burner which bears his name is constructed on the principle of a round-wicked lamp. The burning gas or oil is fed up a hollow cylinder. Air comes up the hollow core as well as on the outside and produces active combustion with correspondingly intense heat. See CHEMISTRY; LIGHT.

Bunting, a soft, light, plain-woven, wool textile dyed in solid colors. It is used to some extent as a dress fabric, but in this country it is employed chiefly in the manufacture of flags, signals, and pennants. Bunting was first manufactured in the United States about 1864. See FLAG.

Bunyan, John (1628-1688), the author of *Pilgrim's Progress.* His father was an English tinker. He himself was taught to wander about mending the housewife's kettles and pans, sleeping in

hedges, and spending his pennies at low taverns. According to his own story, told in *Grace Abounding to the Chief of Sinners,* he was so profane that even hardened sinners were shocked. He was so notorious a drunkard that his presence was not desired even in dramshops. He married a pious Baptist woman, was converted, and, though ignorant, turned the talents he possessed for wickedness into exhorting sinners to turn from their evil ways. He became a noted revivalist. Thousands crowded to hear him preach of wrath and salvation. His preaching drew from the attendance at the established churches and he was thrown into Bedford jail as a disturber of the peace.

While lying in jail he wrote an allegory called *The Pilgrim's Progress from This World to That Which is to Come.* Christian is an anguished dweller in the City of Destruction. Evangelist warns him to flee. "Now he had run from his own door, but his wife and children perceiving it, began to cry after him to return; but the man put his fingers in his ears, and ran on, crying, 'Life! life! eternal life!'" Pliable runs with him, but turns aside and sinks in the Slough of Despond. Worldly Wiseman tells Christian he is a fool and turns him aside among burning mountains. Evangelist reappears and points out the Straight Gate. Interpreter shows him the way to the Celestial City. He climbs the Hill of Difficulty, is entertained by Watchful and his daughters, Piety and Prudence. His passage through the Valley of Humiliation is won after a hard fight with Apollyon. Unseen monsters terrify in the Valley of the Shadow of Death. Vanity Fair with its buyers and sellers spreads a net of attractions for the weak. Faithful, his companion, is taken and bound at the stake. Christian going onward joins another friend, Hopeful, but turning from the straight and narrow road into a pleasant bypath through a meadow, is taken with his companion by Giant Despair and thrown into Doubting Castle. A key called Promise liberates them from the Dungeon, and the old giant is seized by rheumatism so that he cannot follow them. In the Delectable Mountains they see the Celestial City. The fogs and briers of Enchanted Ground and Beulah Land, with its flowers and songs of birds, bring them to the black, cold river which all must cross. Faith sustains them in its dark billows. A company in white and shining raiment with trumpets in their hands receive them on the other shore and crying, "Holy, holy, holy is the Lord," convey them to the fair city with streets of gold, and into the presence of the King, "which when I had seen, I wished myself among them," concludes Bunyan.

Later he wrote an account of Christiana, the wife, and her children who followed Christian to the Celestial City; but by that time the dangers of the trip had been abated and the journey is not so full of incident and fighting.

Ninety-three per cent of the words in *Pilgrim's Progress* are short, terse, Anglo-Saxon words such as Bunyan learned from his Bible. This allegory, written by a tinker preacher in a jail, is second only to the Bible in its influence on English-speaking people. The characters are such as may be found in any parish. Lord Hate-Good, the vile judge of Vanity Fair, is understood to be the infamous Lord Jeffreys who conducted the Bloody Assizes. A hundred thousand copies of the *Pilgrim's Progress* were printed during the author's lifetime. American colonists brought it with them to America. It has been translated into almost as many languages as the Scriptures. The omission of a few pages relative to old time persecution of heretics makes the book equally acceptable to Protestants and Catholics.

In his *Essay on Bunyan,* Macaulay concludes:

> Though there were many clever men in England during the latter half of the seventeenth century, there were only two minds which possessed the imaginative faculty in a very eminent degree. One of those minds produced the *Paradise Lost,* the other the *Pilgrim's Progress.*

Of his own work Bunyan wrote:

> Would'st read thyself, and read thou know'st not what,
> Oh, then come hither
> And lay my book thy head and heart together.

Buoy, boi, in navigation, any float designed to indicate a rock, shallow, or channel. A row of buoys may be anchored along either side of a channel leading amid rocks or shallows to a harbor, in which case those of one series are painted usually of a color strongly contrasting with that of the other series. A pilot is assisted by knowing that he must steer, for instance, to the right of all red buoys and to the left of all black ones. When proceeding up stream or toward the head of a harbor or estuary, the pilot leaves flat-topped buoys on the port hand and conical-shaped buoys on the starboard hand. Spherical buoys indicate a shallow with a channel on each side. Bell buoys carry a bell rung by the heaving of the waves. Lamps and even electric lights, in a shore circuit, of course, are employed to render buoys visible at night. A life buoy is a life preserver, made usually of first crop cork covered with painted canvas. It is made in the form of a belt and is designed to surround the body below the armpits, and keep a person afloat till boats can reach him. Ships are required by law to carry life buoys accessible in case of disaster.

Burbank, Luther, an American horticulturist. He was born at Lancaster, Massachusetts, March 7, 1849. He was reared on a farm. He labored four years to develop a smooth, mealy, good-sized potato, one reasonably free from insect plagues. The Burbank potato was the result. With means obtained from selling seed potatoes, in 1875 he opened an experimental farm at Santa Rosa, California. He is the most distinguished American improver of fruits and vegetables. He has originated the Burbank potato, half a dozen valuable plums, three prunes, two choice callas, several roses, and a number of new varieties of apples, peaches, nuts, flowers, and vegetables. His grounds are a center of interest. Seemingly nothing is beyond his skill. He has even developed a white blackberry, to which he has given the name of the iceberg. Wonders are expected of a spineless cactus which, it is hoped may prove a suitable plant for cattle on the arid plain.

Burbank's general plan of work is to hasten the process of evolution by supplying conditions as to fertility, heat, and moisture that will bring on changes more rapidly than nature would do. Of ten thousand plants, he selects a few and destroys the rest. Of many thousand descendants of these plants, he destroys all but a few and so on. Starting with a red poppy that shows a spot of yellow, he raised a plot of poppies. A few showed yellow. These he cared for and destroyed the others. Seeds from these produced a plot of poppies showing more yellow. He saved the best and destroyed the rest, until he had a variety of yellow poppies with blossoms six inches in diameter coming true from the seed. He is called the wizard of horticulture, but he resents the name, as he relies on skill, judgment, and patience, not on magic. He adopts and hastens nature's ways. See MUTATION.

Mr. Burbank has made no effort to make money out of his new varieties. He is too busy for that. He says his time is worth $250 an hour to the world. In a money sense, he has remained a poor man. The Carnegie Institute, however, has placed $100,000, or $10,000 a year for ten years, at his disposal, so that he is now in the very joy of carrying on his work with no lack of means. He says of his own work:

> One more grain to the head of wheat, rye, barley, oats or rice; one more kernel of corn to the ear; one more potato to the hill or peach, pear, plum, orange, or nut to the tree would add millions of bushels to the world's food supply, millions of dollars to the world's wealth, not for one year only but as a permanent legacy. That is what I am trying to do.
>
> I have here a plant school to suppress the bad and develop the good qualities of flowers, fruits, and all useful plants. I give them everything they need as a wise mother does to children—the right conditions of soil and climate and food—fertilizer. I keep the evil away, sterilizing the soil and water as you sterilize milk for infants. It takes ten generations, sometimes, for a plant to overcome a hereditary fault but the work is always rewarded in the end, and the world is the richer.

> There are other plant breeders, but Luther Burbank stands alone. He is a private person pursuing his own work in his own way and because he loves it so well that he cannot forego it. He is a gardener of a new kind. Every plant appeals to him. . . . Mr. Burbank is a

plain, modest, sympathetic, single-minded man. He is not a wizard. Luther Burbank stands for a great new idea in American horticulture. It is time we begin to recognize what this is. . . . He is a master worker in making plants to vary. Plants are plastic material in his hands. He is demonstrating what can be done. He is setting new ideals and novel problems. Heretofore gardeners and horticulturists have grown plants because they are useful or beautiful. Mr. Burbank grows them because he can make them take on new forms. This is a new kind of pleasure to be gotten from gardening, a new and captivating purpose in plant growing. It is a new reason for associating with plants. It is of little consequence to me whether he produces good commercial varieties or not. He has a sphere of his own and one that should appeal to a universal constituency. In this way, Luther Burbank's work is a contribution to the satisfaction of the living and is beyond all price.—L. H. Bailey, *Plant Breeding.*

Burdett-Coutts, bûr-dĕt-kōōts′, **Angela Georgina, Baroness** (1814-1907), an English philanthropist. She was the daughter of Sir Thomas Burdett, a parliamentarian of note, and the granddaughter of Thomas Coutts, a London banker. While still a girl, she inherited immense wealth which she used in public and private charities so freely and yet wisely that she won the love of those whom she benefited and the admiration and respect of all. Angela Burdett built the first institutional church, St. Stephens, at a cost of four hundred and sixty thousand dollars. Other works followed, all of which had for their object the relief of suffering, the betterment of the people. She was made a baroness by Queen Victoria in 1871, and added her grandfather's name of Coutts to her own name of Burdett. Her influence was thus increased and she used it to procure laws to protect children and animals from cruelty and to insure health by better sanitation. In 1882 she married her private secretary, W. L. Ashmead Bartlett, who took her name and aided her in her efforts for good. She lived to be ninety-three years of age, but will be long remembered as an example of what an unselfish life may accomplish.

Burdette, Robert Jones (1844-1914), an American humorist. He was born at Gainsborough, Pennsylvania. He served in the Union army during the Civil War, and began newspaper work soon after. In 1874 he became associate editor of the Burlington (Iowa) *Hawkeye.* Later he received license to preach as a Baptist clergyman. Burdette is known as a humorous lecturer, possessing in large measure the gift of swaying the emotions of his audience. There is a simple freshness in his writings that is delightful. His humor is peculiarly his own, and, while very unpretentious, possesses a quality which never wearies but invites to read and read again. Some of his articles were collected and published in book form in 1877, under the title of *Hawkeytems.* Other writings are *Life of William Penn, Chimes from a Jester's Bells,* and *Rise and Fall of the Moustache.* Mr. Burdette is also the author of a number of poems.

Burdock, a despised weed. It is a member of the composite family, and is related to the thistles. The flowers and seeds are inclosed in a bur-like involucre, whence, no doubt, the name. The scales of the bur-like head are armed with curved prickles, by means of which children at play hook burdock heads together to form necklaces. "Burdocks are great travelers." The burs fasten themselves into the wool, fur, and hair of animals and are distributed. A cow's tail is not infrequently matted with such burs, and the same may be said of a sheep's fleece. Small birds are sometimes entangled by the strongly hooked burs. Instances are on record of a humming bird and of a goldfinch coming to an untimely end in this way. The Japanese are said to have improved the burdock by cultivation until its root is a prized garden vegetable. Burdock root is an old-fashioned remedy used to "cleanse the system,"—a rival of sarsaparilla. About 50,000 pounds of Belgian burdock root are imported yearly by American druggists. The fresh leaves, also, make a grateful, cooling poultice for certain swellings and ulcers.

Burglary, in law, the breaking and entering the house of another with intent to commit a crime, particularly to steal. In a wider sense the term applies to the criminal entry of any building. The penalty is usually from five to ten years' imprisonment. North Carolina makes burglary

BURBANK AND HIS WORK

1. Walnut Tree and Fruit.
2. Cherry with pit remaining on stem.
3. Amaryllis.
4. Poppy.
5. Iris.
6. Everlasting.
7. Rose.
8. Calla.
9. Shasta Daisy.
10. White Blackberry.
11. Thornless Raspberry.
12. Quince.
13. Stoneless Prune.
14. Apple-Plum.
15. Apples.
16. Burbank Potato.
17. Ordinary Thorny Cactus.
18. Thornless Cactus with fruit—Prickly pear.

punishable by imprisonment or death. The slightest breakage, as of a window pane, or the removal of the smallest portion of the house, with evident intent to enter, constitutes an act of burglary. The forcible entrance of a foot or hand is likewise proof of intent to commit burglary. See ARSON.

Burgoyne, bûr-goin′, **John** (1723-1792). An English soldier. He came of a good family and secured influence by marriage into a earl's family. He sat in Parliament, served in Portugal, and joined General Gage in Boston. He was an onlooker at the battle of Bunker Hill. In 1777 he conducted the ill-fated invasion of New York by way of Canada that ended in Burgoyne's surrender, whereby army stores, artillery, and 5,791 fighting men fell into the hands of the Americans. His courage has never been questioned, but the unfortunate end of the expedition, and its influence in encouraging the French to espouse the American cause, led to Burgoyne's neglect. He was refused an audience with the king and was denied a court-martial. He resigned from the army. He wrote plays for the stage and was one of the Parliamentary committee appointed to impeach Warren Hastings. Like many another luckless commander he continued to the end to lay the blame for his defeat on others. He wrote a book to show that the British cabinet was to blame for his defeat at Saratoga.

Burgundy, a province of France noted for its red wines. Historically Burgundy is the home of the Burgundians, a German people occupying the valleys of the Loire and the upper Rhone. The seat of the Burgundian kingdom was at Lyon or Geneva. The Burgundians were at war frequently with the Franks, and were several times subdued only to reassert their independence. Under Philip the Bold and Charles the Bold, extensive territory was acquired as far north as Holland. It was only shortly before the discovery of America that it was decided that France should absorb Burgundy, and not Burgundy, France. See FRANCE; CHAMPAGNE.

Burial of Moses, The, a well known poem by Mrs. Cecil Frances Alexander, an Irish poet who died in 1895. There are few poems in which the language and the metrical form are more appropriate to the emotions suggested. It is, therefore, a poem that will never cease to be read.

This was the truest warrior
  That ever buckled sword,—
This the most gifted poet
  That ever breathed a word;
And never earth's philosopher
  Traced with his golden pen,
On the deathless page, truths half so sage
  As he wrote down for men.
And had he not high honor—
  The hill-side for a pall,—
To lie in state while angels wait,
  With stars for tapers tall,—
And the dark rock-pines, like tossing plumes,
  Over his bier to wave,
And God's own hand in that lonely land,
  To lay him in the grave?

Burke, Edmund (1729-1797), a British statesman. He was a native of Ireland, and was educated at Trinity College, Dublin. He was prepared for the study of the law, but took up politics. At the age of thirty-five he entered Parliament, where he formed one of a group of orators. Chatham, Fox, Erskine, Pitt, Sheridan, Grattan, and Burke—they have not been equaled before or since, and, at the present distance, it is but fair to say that Burke was the greatest of them all.

He deprecated the course of Parliament in offending and alienating the American colonies. He was possessed of profound views of justice and fairness to all men. He told the members of Parliament that fair treatment,—such as in the twentieth century is accorded Canada and Australia, —would be satisfactory to the Americans and that they were entitled to simple justice. If Burke's views had prevailed with Parliament, the American Revolution would have been deferred; quite possibly it might not have occurred; we might have extinguished slavery without a civil war and be yet a member of the British Empire. Burke did not deny the right of Parliament to tax the colonies. He opposed various acts of Parliament as inexpedient. Burke's attitude may be seen from passages from his *Conciliation:*

I do not mean to commend either the spirit in this excess or the moral causes which produce it. Perhaps a more smooth and accommodating

spirit of freedom in them would be more acceptable to us. Perhaps ideas of liberty might be desired more reconcilable with an arbitrary and boundless authority. Perhaps we might wish the colonists to be persuaded that their liberty is more secure when held in trust for them by us, as their guardians during a perpetual minority, than with any part of it in their own hands. The question is not whether their spirit deserves praise or blame, but what, in the name of God, shall we do with it? . . . I do not know the method of drawing up an indictment against a whole people. . . . The colonies complain that they have not the characteristic mark and seal of British freedom. They complain that they are taxed in a Parliament in which they are not represented. If you mean to satisfy them at all, you must satisfy them with regard to this complaint. If you mean to please any people, you must give them the boon which they ask,—not what you may think better for them, but of a kind totally different. Such an act may be a wise regulation, but it is no concession; whereas our present theme is the mode of giving satisfaction. . . . My idea, therefore, without considering whether we yield as matter of right or grant as matter of favor, is to admit the people of our colonies into an interest in the Constitution.

Burke saw farther into the American future than the majority of his fellow members. He opposed the war with the American colonies as unwise, unnecessary, and suicidal. The American reader is likely to think that the mind of Edmund Burke was engrossed with American affairs. His interest in the colonies was indeed intense, but it was an interest in the effect that a false colonial policy might have on England herself. In his treatment of American topics Burke was farseeing and democratic beyond his day. He understood Americans because they were Englishmen. He understood the colonists because he conceived them to be like himself. He understood the people of the colonies because he understood the people of Chester, of Wales, of Scotland, and of Ireland.

In his treatment of French problems, however, Burke failed to understand that democracy is democracy in France as well as in England. Burke had opportunity to study the French Revolution close at hand. London was full of refugees. He had every chance to understand what was going on across the English Channel, and yet in *Reflections on the French Revolution,* written in 1790, he failed to interpret the spirit of democracy that moved the people of France. He denounced the wrongdoings of Hastings, the autocratic ruler of India, but he failed to get hold of the French situation. He attacked the French Revolution, he assailed its leaders, and he expressed a profound conviction that a flood of evils could not fail to flow from the adoption of the democratic and leveling ideas of the French popular leaders. Burke's early attitude was helpful to the cause of the common people; his later influence was exerted and was felt, too, in the opposite direction. The following sketch is taken from J. R. Green:

Burke had come to London in 1750 as a poor and unknown Irish adventurer. The learning which at once won him the friendship of Johnson, and the imaginative power which enabled him to give his learning a living shape, promised him a philosophical and literary career: but instinct drew Burke to politics; he became secretary to Lord Rockingham, and in 1765 entered Parliament under his patronage. His speeches on the Stamp Acts at once lifted him into fame. The heavy Quaker-like figure, the scratch wig, the round spectacles, the cumbrous roll of paper which loaded Burke's pocket, gave little promise of a great orator and less of the characteristics of his oratory—its passionate ardour, its poetic fancy, its amazing prodigality of resources; the dazzling succession in which irony, pathos, invective, tenderness, the most brilliant word-pictures, the coolest argument followed each other. It was an eloquence indeed of a wholly new order in English experience.

Burke's speech *On Conciliation with America,* and on *American Taxation* are read in American schools as specimens of British eloquence and for their historical value. Other works of importance are an *Essay on the Sublime and the Beautiful,* and the *French Revolution.* His greatest oratorical effort was the *Impeachment of Warren Hastings.* See HASTINGS.

Burlap, a heavy, coarse material, made of hemp or jute. It is used for wrapping furniture, for bagging, as a foundation for floor oil-cloth, and other purposes for which a strong but pliable cloth is needed. A rather better quality is dyed in solid colors, and is backed with sizing. It is used for wall coverings. Burlap is printed sometimes in ornamental designs. See JUTE; HEMP.

Burlesque, bûr-lĕsk′, a literary production which tends to excite laughter by an

exaggerated or ludicrous presentation of the peculiarities of some other work, or of some actual occurrence or condition. A burlesque is to drama what caricature is to art or to the serious business of life. The word is from the Italian *burla* meaning mockery. In its general use the word burlesque designates properly such works as Butler's *Hudibras,* Cervantes' *Don Quixote,* and many of the poems of Thomas Hood and of Oliver Wendell Holmes.

Burlesques have been known since the earliest beginnings of drama, many of the comedies of Aristophanes being of a burlesque character. The word is used in a somewhat narrower sense to designate a modern stage production which combines burlesque with vaudeville. See ARISTOPHANES; VAUDEVILLE.

Burlington, a city of Vermont situated on Lake Champlain, and on the Rutland and the Central Vermont railroads. It is a city of beautiful situation, of wide and cleanly streets, handsome residences and fine public buildings, and of wide reputation for its educational, religious, and charitable institutions.

The excellent harbor makes the city an important lumber market, and its manufactures include lumber, stone and marble products, also cotton and woolen goods and proprietary medicines. Besides the University of Vermont and the State Agricultural College, there is a school for boys, called the Vermont Episcopal Institute, a girls' school called Bishop Hopkins Hall, and two commercial colleges. The public school system is of high standing. Other notable institutions are the Mary Fletcher Hospital and the Fletcher Free Library, now in a Carnegie building. The population in 1920 was 22,779.

Burma, a province of British India, including Upper Burma, Lower Burma, and the Shan States. The Bay of Bengal forms the southwestern and the southern boundary of the province. Tibet lies north; Yun-Nan, French Indo-China, and Siam east. It has an area of 236,738 square miles, which means that it is not quite so large as the state of Texas. Its population is something over ten millions. The country is hilly, the greatest elevation being in the north, giving this part of the province a climate temperate as compared with the torrid region of Lower Burma. Two rivers, the Irawadi and Salwin, with their numerous tributaries drain the land. The Irawadi is navigable for large steamers for a distance of seven hundred miles, and is the most important avenue of trade although several railroads traverse the province, and connect important towns. Agriculture is the leading industry, about nine million acres being devoted to the cultivation of rice. Other products are wheat, tea, cotton, sugar-cane, tobacco, and indigo. The only manufactures of importance are the weaving of silk, and cotton textiles. Forests are extensive, teakwood, and bamboo being valuable products.

The natural resources of Burma include deposits of silver, lead, copper, iron, tin, amber, coal, and petroleum. Gold, sapphires, and rubies are found in certain parts. The rubies are said to be the finest in the world.

The Burmese, and the numerous tribes other than the Burmese proper, belong to the Mongolian race. Buddhism is the principal religion. There are also Mohammedans, Hindus, and Christians. The language is monosyllabic. There is little accurate knowledge of the early history of the Burmese. They are believed to have come into the province about two thousand years ago. Their history consists in an account of the rise and fall of different dynasties, invasions of the Chinese, and the gradual coming under British dominion. Since Burma has become a British province its chief executive is a lieutenant-governor who rules under the viceroy of India. Rangoon is the capital city of Burma. Its population is 234,881.

Burne-Jones, Sir Edward (1833-1898), an English artist, noted especially for his figure paintings and his decorative designs. He was born at Birmingham. He attended Oxford University, but coming under the influence of Dante Gabriel Rossetti, gave up other education to devote himself to art. He is classed among the preraphaelites, although not a member of the Brotherhood of that name. He held,

however, the same aims and the same ideals of art. Burne-Jones painted both in water-color and in oils, and his work is remarkable for the poetic feeling displayed in his conceptions and for richness and brilliancy of coloring. Among his best-known paintings are *Venus' Mirror, The Golden Stair, King Cophetua and the Beggar Maid,* and *The Annunciation.*

Burnett, Frances Hodgson (1849-), an English-American novelist. She was born in Manchester, England. While a young woman, she came to America, where she married Dr. S. M. Burnett. Divorced from him in 1898, she married Stephen Townsend, an English writer. Mrs. Burnett, as she is usually called, spends a part of each year in England, but most of her literary work has been done in the United States. Her first literary success was *That Lass o' Lowrie's,* which apeared serially in *Scribner's Magazine.* Her most famous story is *Little Lord Fauntleroy,* which has been very popular both in book form and as dramatized. Other novels are *Louisiana, Haworth's,* and *A Fair Barbarian. Sara Crewe* and *Little Saint Elizabeth* are stories of child life.

Burns, John, a London labor leader. He was born in 1858. His father was an engineer. He began work at the age of ten in a candle factory at the wage of twelve cents a day. Later, he served an apprenticeship in engineering. He became a labor leader and developed ability as an open air speaker. He joined the Socialists in 1883. In 1886 he was arrested for speaking in Hyde Park. On his release he made a speech which was printed under the title, "The Man with the Red Flag." November 13, 1887, Bloody Sunday, he broke through the police lines to speak in Trafalgar Square and was arrested again. In 1889 he became a member of the London Council, and in the same year he organized and led the famous "Dock Strike." In 1892 he was elected to Parliament by a workingmen's district in London. In 1905 he entered the Liberal cabinet organized by Mr. Campbell-Bannermann. Mr. Burns is the first English workingman to hold a cabinet office. He is (1909) president of the Local Government Board. In this position he is known as the Right Honorable John Burns, and receives a salary of $10,000 a year. He still remains a member of the Union of Amalgamated Engineers. He is a total abstainer, a man of unimpeached integrity. Mr. Burns dresses, of course, like any other professional man. When he attends a royal reception he wears the garb prescribed for the occasion and is a man of commanding appearance, but no one could mistake him for an imitation of aristocracy.

To look down from one of the galleries on John Burns sitting on the Treasury bench is to see apparently an old man. The hair is almost snow-white; the forehead pale, spreading, and deeply lined; his movements as he adjusts his eyeglasses and reads over his official papers are leisurely and might even seem fatigued. But wait a moment. Wait till he lifts his face and you catch a glimpse of his great, brown, clear, burning eyes. Or wait till he rises to address the House, electrical alertness speaking from every gesture, from the very poise of the body, power and passion in his voice, his whole bearing eager, defiant, welcoming the combat. Or see him again on the Terrace outside—a thick, square man, in a blue reefer suit, his head thrown massively back, tramping up and down with free and swinging stride. You would not then think him old. Still less would you think so if you walked with him through the streets or parks, among his own people, giving and exchanging salutations, patting a youngster on the head, helping to fish out a ball that has fallen into the Serpentine, showing a boy how to handle a cricket-bat, skipping over the ropes with the girls, congratulating the mothers, jesting with the policemen, the very picture of zest, health, and jollity. The workmen know him and love him. They recognize in him the biggest man that their class in England has yet produced. And John Burns knows them and loves them in return, and uses both his knowledge and his affection to rebuke, chastise them, and make them elevate themselves. Himself a non-smoker and a total abstainer, he never shirks from rubbing in his conviction that there is little the government can do for the workingman compared with what the workingman can do for himself. No man has spoken out more strongly against drink and betting. No man has insisted more trenchantly that social and industrial reform must begin with the individual.

It is here where he parts company with Mr. Keir Hardie and his followers. They are Socialists, look to the state for everything, proclaim it as a natural right of every man to have remunerative work found for him, and are swiftly, as it seems to me, rousing the laboring classes to a very ugly mood. John Burns hates nothing so much as the thought of the English workingman becoming a prey to cringing, shirking pau-

perization. John Burns wishes to see the workingman brave, upright, and above all, independent. From the very first he has had the profoundest contempt for the charity-mongers, vicarious philanthropists whose policy of spoon-feeding the unemployed ends, as he says, "in the demoralization of the donors and the degradation of the recipient."—Sydney Brooks in *Harper's Weekly*.

Burns, Robert (1759-1796), a Scottish poet. He was born January 25, 1759, in an "auld clay biggin," or cottage, about two miles south of Ayr. His father was a tenant farmer of intelligence and small means, but desirous that his children should have an educated understanding. The father's portrait is drawn for us in the *Cotter's Saturday Night*. Burns's school education consisted of reading, writing, grammar, and arithmetic, and later of a little geometry and less Latin and French. The Burns family was neither poorer nor richer than thousands of other families.

As soon as Robert was old enough he was needed to help with the work. The father was unfortunate in the management of a small farm, lost what little he had, and became unable to labor. Robert was the oldest boy and it fell on him to support the family. He got away for a short time now and then, once with a view to learn a trade; but settled down to ditch, plow, sow, reap, and flail. He was a strong, active fellow. He was not afraid of work, yet he longed to be a scholar. He felt at times that he was working like a galley slave. Seeing other young men with, as it seemed to him, a better chance, he felt

> It's hardly in a body's pow'r,
> To keep, at times, frae being sour,
> To see how things are shar'd.

He did not realize that the education of the schools and the good things of life would have cut him off from writing the poems of the people which have made him famous. In fact, his best writing was done in the years when he was working hard all day. His brother tells us that Robert climbed to a garret at night where he kept his writing material to write the thoughts that had occurred to him as he followed the plow. His lines *To a Mountain Daisy* beginning,

> Wee, modest, crimson-tipped flower,
> Thou's met me in an evil hour;
> For I maun crush among the stoure
> Thy slender stem:
> To spare thee now is past my power,
> Thou bonny gem.

were written in this way. Only one himself in hard circumstances, and who had himself turned up a mouse's nest with a plow, could have written:

> That wee bit heap o' leaves and stibble
> Has cost thee mony a weary nibble!
> Now thou's turn'd out for a' thy trouble
> But house or hauld,
> To thole the winter's sleety dribble,
> And cranreuch cauld!
>
> But, Mousie, thou art no thy lane,
> In proving foresight may be vain:
> The best laid schemes o' mice and men
> Gang aft a-gley,
> And lea'e us nought but grief and pain
> For promised joy.

We may add only such can appreciate the poem to the full. Burns's very power lies in the fact that he is a plowman speaking to plowmen. Scotland is a great country for folk songs. Burns was intensely fond of repeating them. To become a poet was his ambition. Writing of his youth to a friend of his maturer years, he says:

> Even then a wish (I mind its power)
> A wish that, to my latest hour,
> Shall strongly heave my breast—
> That I, for poor auld Scotland's sake,
> Some useful plan or beuk could make,
> Or sing a sang at least.

As to his style of writing we can say only that the songs of the countryside were at his tongue's end. He repeated them and sang them until the thoughts in his own mind ran into them like molds. He followed the old meters and rhymes, and not infrequently he used many of the words. One who is familiar with Scottish songs can recognize their influence readily.

After a number of his poems had been circulated in a small way among friends, Burns decided to print them, which he did in a small volume known from the place of publication as the Kilmarnock edition of 1786. The paper was poor and the binding worse; but the volume brought the author fame and a few guineas. Copies are now among the treasures of libraries and book collectors. The original price

was three shillings. A copy sold recently for $2,860 at an auction of rare books.

Burns had had thoughts of going to Jamaica where a living could be made more easily, but the sale of his little book put that out of his mind. He visited Edinburgh, where his personality and appearance, wit and independence of speech, as well as the character of his poems, made him the lion of the hour. His conversation was as refreshing in the conventional society of the drawing room as a whiff of air from the mountains. A subscription to a new edition was taken up by an association known as the Caledonian Hunt, and Burns returned home feeling that he had won a place in the world's notice.

It would seem that one who had risen thus far would rise higher, but Burns had weaknesses in his character. For one thing he was enamored of many women. Some he treated well; others he treated ill. He was handsome, vain, and weak, but appears to have had a high ideal. The woman of Burns's songs is superior. We give two quotations. The first was inspired by Handsome Nell, a boyhood friend. It was written when he was seventeen; the second is from his *Address to Mary in Heaven,* a poem inspired by the death of Highland Mary to whom he appears to have been sincerely attached:

She dresses aye sae clean and neat,
Both modest and genteel;
And then there's something in her gait
Gars ony dress look weel.

O, Mary! dear departed shade!
Where is thy place of blissful rest?
See'st thou thy lover lowly laid?
Hear'st thou the groans that rend his breast?

That sacred hour can I forget?
Can I forget the hallow'd grove,
Where by the winding Ayr we met,
To live one day of parting love?

Eternity cannot efface
Those records dear of transports past,
Thy image at our last embrace—
Ah! little thought we 't was our last!

From the edition for which arrangements were made in Edinburgh, Burns realized $2,500. With this sum in hand he rented and stocked a farm and married Jean Armour, one of the young women with whom he was entangled. It would be pleasant to record a life of industry and respectability, but the truth is otherwise. His farming Burns never made pay. He spent much time at the public house. The drink habit grew upon him. He was fond of convivial gatherings and tavern cronies that did him no good. Some of his carousing songs are otherwise among his best efforts. The quotation is from *O, Willie Brew'd a Peck o' Maut:*

O, Willie brew'd a peck o' maut,
And Rob and Allan cam to pree;
Three blyther hearts, that lee-long night,
Ye wad na fand in Christendie.
Cho. We are na fou, we're no that fou,
But just a drappie in our e'e;
The cock may craw, the day may daw
And aye we'll taste the barley bree.

Burns was in a tilt every now and again with the elders of the parish, that is to say, the Presbyterian church. He accused them of hypocrisy, and wrote several poems that were far from complimentary. His real attitude toward religious matters may be known from the *Cotter's Saturday Night,* and are well expressed in the following lines from his *Epistle to a Young Friend:*

The great Creator to revere,
Must sure become the creature;
But still the preaching cant forbear,
And ev'n the rigid feature:
Yet ne'er with wits profane to range,
Be complaisance extended;
An atheist laugh 's a poor exchange
For Deity offended.

Failing in farming, Burns secured a petty appointment from the London government as a collector of excise. In his *Essay on Burns* Carlyle, one of the few writers who understood the Scottish poet, grows indignant that mankind should permit a genius to go sizing up the brew of housewives and collecting the few pennies due the government on every making of ale. Burns himself writes a humorous poem on the duties of the exciseman.

To the poems already mentioned we must add *Tam o' Shanter, The Jolly Beggars, Bonnie Doon, Auld Lang Syne, A Man's a Man for a' That, Address to the Deil, Hallowe'en, The Farmer's Salutation to his Auld Mare, The Brigs of Ayr, To a Louse, To the Toothache,* etc.

In the later and inglorious part of his

life Burns did some excellent writing; but his habits were such that he was shunned by reputable society, even in the small town of Dumfries where he lived. He became so reduced in circumstances that he was by no means free from danger of imprisonment for debt. His constitution was undermined by work, worry, drink, and despair. He died, July 21, 1796, at the early age of thirty-seven. He was no sooner dead than Scotland realized its loss. A memorial was erected in the churchyard of Dumfries. A subscription edition of his life and works placed the family above want. As the years go by, his faults have been overlooked more and more, as if his *Advice to the Unco Guid* were an appeal to posterity:

Then gently scan your brother man
Still gentler sister woman;
Tho' they may gang a kennin wrang,
To step aside is human:
One point must still be greatly dark,
The moving *why* they do it;
And just as lamely can ye mark,
How far, perhaps, they rue it.

Burns was rarely gifted. He struggled to make something of himself, but was after all as nature made him. Because he could not write the verse of Pope and Milton, he feared he was a failure. Burns sang not of warlike deeds, nor of far away subjects, but of the homely topics that appeal to all. No other ever interpreted the feelings of the people more truly. No other writer of his century has so strong a hold on the affections of the world.

Burns is termed variously "the ploughman poet," "the Ayrshire ploughman," "the Bard of Ayrshire," and "the Peasant." No one would think of saying Harry Longfellow or Jack Whittier, but to the Scotch Burns is just Bobbie Burns, and that tells the whole story.

See AYR; DUMFRIES.

He spoke of Burns: men rude and rough
Pressed round to hear the praise of one
Whose heart was made of manly, simple stuff,
As homespun as their own.
And when he read, they forward leaned,
Drinking with thirsty hearts and ears,
His brook-like songs whom glory never weaned
From humble smiles and tears.
—Lowell, *An Incident in a Railroad Car.*

Wild heather-bells and Robert Burns!
The moorland flower and peasant!
How, at their mention, memory turns
Her pages old and pleasant!
Give lettered pomp to teeth of Time,
So "Bonnie Doon" but tarry;
Blot out the Epic's stately rhyme,
But spare his Highland Mary!
—Whittier, *Burns.*

He owes no honor to the subjects, which his muse selected, for they are ordinary, and such as would have tempted no poet, save himself, to sing about.—Allan Cunningham.

Burns is by far the greatest poet that ever sprung from the bosom of the people and lived and died in an humble condition.—Professor Wilson.

O he was a good-looking fine fellow!—he was that; rather black an' ill-colored; but he couldna help that, ye ken. He was a strong, manly-looking chap; nane o' your skilpit milk-and-water dandies: but a sterling, substantial fellow, wh wadna hae feared the deil suppose he had met him. An' then siccan an ee he had!—Memoir of Burns.

His person was strong and robust, his manners rustic, not clownish; a sort of dignified plainness and simplicity which received part of its effect perhaps from one's knowledge of his extraordinary talents. . . . I think his countenance was more massive than it looks in any of the portraits. . . . There was a strong expression of sense and shrewdness in all his lineaments; the eye alone, I think, indicated the poetical temperament. It was large and of a dark cast, and glowed (I say literally glowed) when he spoke with feeling or interest. I never saw such another eye in a human head, though I have seen the most distinguished men in my time. His conversation expressed perfect self-confidence without the slightest presumption.—Sir Walter Scott.

None but the most narrow-minded bigots think of his errors and frailties but with sympathy and indulgence; none but the blindest enthusiasts can deny their existence.—James Hogg.

It needs no effort of the imagination to conceive what the sensation of an isolated set of scholars (almost all either clergymen or professors) must have been in the presence of this big-boned, black-browed, brawny stranger, with his great flashing eyes, who, having forced his way among them from the plough-tail, at a single stride, manifested in the whole strain of his bearing and conversation, a most thorough conviction that in the society of the most eminent men of his nation, he was exactly where he was entitled to be; hardly deigned to flatter them by exhibiting even an occasional symptom of being flattered by their notice; by turns calmly measured himself against the most cultivated understandings of his time, in discussion; overpowered the *bon mots* of the most celebrated convivialists by broad floods of merriment, impreg-

nated with all the burning life of genius; astounded bosoms habitually enveloped in the thrice-piled folds of social reserve, by compelling them to tremble—nay, to tremble visibly—beneath the fearless touch of natural pathos.—Lockhart.

Burnside, Ambrose E. (1824-1881), an American soldier. He was born at Liberty, Indiana, and was educated at West Point. In the Civil War he was at Bull Run, South Mountain, and Antietam. In the autumn of 1862 he was appointed to supersede General McClellan in command of the Army of the Potomac. December 13th he was worsted by General Lee, and lost 10,000 men in the battle of Fredericksburg. Restored to a subordinate position, he fought with Grant at the Wilderness and Cold Harbor. After the war he was elected governor of Rhode Island and served that state in the United States Senate.

Burr, Aaron (1756-1836), an American politician. His father was an eminent Presbyterian clergyman and was for a short time president of Princeton College, now University, from which the son was graduated in 1772. His mother was a daughter of the celebrated Jonathan Edwards. Aaron is cited as an example of unaccountable moral degeneracy. In the Revolutionary War he joined the Continental forces before Boston, and took part in the assault on Quebec. Later he joined the Lee and Gates faction against Washington. At the close of the war he married a wealthy widow, and engaged in the practice of law in New York City. He rose rapidly in politics until he reached the United States Senate. Washington refused to appoint him minister to France.

When the presidential election of 1800 drew near, the Federalist members of Congress met in caucus and nominated John Adams and C. C. Pinckney of South Carolina. The Democratic-Republican members in like manner nominated Thomas Jefferson for the presidency and Aaron Burr for vice-president. The election went against the Federalists 73 to 65. The constitution provided that each presidential elector should vote for two candidates:

> The person having the greatest number of votes shall be the president, if such number be a majority of the whole number of electors appointed; and if there be more than one who have such majority, and have an equal number of votes, then the House of Representatives shall immediately choose by ballot one of them for president. . . . But in choosing the president, the votes shall be taken by states, the representation from each state having one vote.

The Republican electors sitting far apart in their several states made the mistake of casting a solid vote for Burr. Jefferson and Burr received seventy-three votes each. This tie threw the election into the House of Representatives in which the Federalists controlled the majority of the states. As the constitution then stood the House had the power only to select one of the two men whose names were tied. The Federalists were barred from voting for Adams. All they could do was to decide between Jefferson and Burr. Burr and his friends were eager to betray Jefferson and make Burr president. They tried to form a coalition with the Federalists. The friends of Jefferson were furious. The Federalists were not partial to Jefferson, but they did not trust Burr. On the thirty-sixth ballot ten states voted for Jefferson; four voted for Burr and two states cast blank ballots. Jefferson, the undoubted choice of the people, so nearly lost the presidency that the manner of election was changed by the adoption of the Twelfth Amendment.

Burr served out his four years as vice-president, after which he ran for the governorship of New York and was defeated. Burr had always been a bitter opponent of Alexander Hamilton. He charged up his present defeat against Hamilton and drew him into a duel in which Hamilton was killed, July 11, 1804. Burr then went to the Ohio Valley and to the southwest. He was arrested on a charge of treason, his accusers claiming that he designed detaching the Mississippi Valley from the Union and erecting a new empire for his own benefit. He was discharged finally for want of proof, but henceforth he was a discredited man. Many doubt his treasonable purpose, but none hesitate to say that he was brilliant, unscrupulous, and dangerous.

In 1833 Burr married a second widow,

but the marriage was an unhappy one and they soon separated. Burr had but one child, a daughter, Theodosia. She kept house for her father in New York City until, in 1801, she married Governor Joseph Allston of South Carolina. In 1812 she sailed from Charleston on the ship Patriot for New York. The ship was never heard from. Some thought it had fallen into the hands of pirates, others that it foundered at sea.

See HAMILTON; BLENNERHASSET.

Burritt, Elihu (1810-1879), a New England reformer. A native of New Britain, Connecticut. He was the son of a shoemaker and learned the blacksmith's trade. An ambition to read the Scripture in the original tongues in which they were written led to prolonged study on his part, gaining for him the nickname of "The Learned Blacksmith." He removed his blacksmith shop to Worcester to be near a good library. In 1846 he began to travel and lecture. He visited England and founded a society with a view to suppress warfare throughout the world. Mr. Burritt was an earnest advocate of a "High Court of Nations," an idea that has taken form in the Hague Tribunal. He also took hold of cheap postage as a means of increasing intelligence. He became an apostle of temperance as well as an anti-slavery writer and speaker. One of his books is entitled *Sparks from the Anvil.*

Burroughs, John (1837-1921), an American naturalist and author. He is Thoreau's most distinguished disciple. He was born at Roxbury, New York, a farmer's boy. He made and sold maple sugar to buy the books he longed for, but from which he learned less than from the outdoor world. He was successively a teacher, a journalist, a clerk in the treasury department, and a bank examiner. At last he returned to the life he loved, settling on a small farm in Esopus on the Hudson. Here he built a home suited to his tastes, gave it the beautiful name of "Riverby," and devoted his time to raising fruit and studying nature at first hand. A footpath leads over the hills from "Riverby" to "Slabsides," a rustic study built in the woods. Here Mr. Burroughs did his literary work. Occasionally he left home and farm for the city, but says: "Three or four days in the city is about all I can stand at a time." Mr. Burroughs' books include *Wake Robin, Winter Sunshine, Locusts and Wild Honey, Indoor Studies, Walt Whitman—A Study, Signs and Seasons, Fresh Fields.*

It seems natural to compare Burroughs with Thoreau. Hamilton Wright Mabie says: "Of the two, Thoreau had the more thorough formal education; but Burroughs shows keener susceptibility to formative influences of all kinds. Thoreau had the harder mind, the nature of greater resisting power. Burroughs is more sensitive to the atmosphere of his time. . . . He had the more open mind, the quicker sympathies, the wider range." Katherine Lee Bates writes: "Thoreau saw natural phenomena with eyes that searched beyond, and he reported, after all, less of this world than of the other. Burroughs is a plainer man, who takes warblers and hemlocks at their surface value and makes literature out of a cow."

He is often at "Slabsides"—sometimes for weeks or months at a time, though he always makes daily visits to the valley to look after the work in his vineyards and to visit the post-office at the railway station. He is a leisurely man, to whom haste and the nervous pursuit of wealth or fame are totally foreign. He thoroughly enjoys country loitering and when he gets a hint of anything interesting or new going on among the birds and little creatures of the fields, he likes to stop and investigate. His ears are remarkably quick and his eyes and sense of smell phenomenally acute, and much which to most of us would be unperceived or meaningless he reads as if it were an open book. Best of all, he has the power of imparting his enjoyment, and what he writes is full of outdoor fragrance, racy, piquant, and individual. His snap and vivacity are wholly unartificial. They are a part of the man—a man full of imagination and sensitiveness, a philosopher, a humorist, a hater of shams and pretension. The tenor of his life changes little from year to year, his affections remain steadfast, and this hardy, gray poet of things rural will continue, as ever, the warm-hearted nature enthusiast, and inspirer of the love of nature in others.—Clifton Johnson.

QUOTATIONS FROM BURROUGHS.

No one starts in the study of natural history with such advantages as he whose youth was passed on the farm. He has already got a great deal of it in his blood and bones; he

has grown up in right relations with man and beast; the study comes easy and natural to him.

You must have the bird in your heart before you can find it in the bush.

Burton, Robert (1577-1640), an English clergyman. He spent his life in study and the writing of one book, *The Anatomy of Melancholy*. He was educated at Oxford and was appointed fellow at the age of twenty-two. From that time he lived in libraries. He says of himself, "I have read many books, but to little purpose, for want of good method. I have confusedly tumbled over divers authors in our libraries with small profit, for want of art, order, memory, judgment." See ANATOMY OF MELANCHOLY.

Doctor and poet, man of letters and savant, he is all at once; for want of dams, ideas pour like different liquids into the same vat, with strange spluttering and bubbling, with an unsavory smell and odd effect.—Taine.

That fantastic great old man.—Lamb.

To whom melancholy gave life and death.—Epitaph by Burton himself.

Bushel, a dry measure. The United States government has sent a standard set of dry measures to each state. A bushel contains four pecks or eight gallons. Abbreviation, *bu.* or *bush.* The capacity of our bushel measure is 2150.42 cubic inches. It is based on the old English Winchester bushel, so called from the fact that the ancient standard bushel measure of England was preserved in the old town hall of Winchester. It is not a scientific measure. It happens to be the volume of a cylinder 18½ inches in inside measure and 8 inches in depth. It holds 77.6274 pounds of distilled water at 39.8° F. under 30 inches atmospheric pressure. In 1826, to correct various local bushels in use, the British Parliament adopted or legalized a standard imperial bushel which holds 80 pounds avoirdupois of distilled water at the temperature of 62° F. under a barometric pressure of 30 inches. Its capacity is 2,218.192 cubic inches. Americans adhere, however, to the Winchester bushel.

Where no contract exists to the contrary, a bushel by weight is required by law. As a measure of weight, the states have adopted various standards, which in the majority of cases, however, are as follows, the figures indicating the number of pounds to the bushel:

Wheat	60	Beets	60
Rye	56	Beans	60
Oats	32	Peas	60
Barley	48	Apples	50
Buckwheat	50	Dried apples	28
Shelled corn	56	Dried peaches	33
Corn on cob	70	Flaxseed	56
Corn and Rye meal	50	Hempseed	44
Bran	20	Milletseed	50
Potatoes	60	Timothy seed	45
Sweet potatoes	60	Bluegrass	14
Carrots	55	Hungarian	50
Turnips	60	Cloverseed	60

Bushmen, an African tribe inhabiting the northwesterly portion of Cape Colony. Unlike their neighbors, the tall Hottentots, to whom they are akin, the Bushmen are of low stature, almost dwarfs in fact. Their complexion is of a dirty yellowish color. When found by the white people, they lived largely on roots and herbs. They slept in caves or in rudely constructed stick houses in the copse or bush, whence the name. They were without fixed homes, and had no domestic animals. Their language is "half way between that of a man and a monkey." The Bushmen are considered among the most degraded human creatures on the face of the earth. They are disappearing before the advances of the white settlers.

Bushrangers, Australian desperadoes. Portions of Australia are covered by an almost impenetrable growth of copse-wood called locally the bush. The earliest settlers were criminals deported from England for life or for a term of years. As the country filled up with actual settlers and gold mines were worked, gangs of thieves and desperate characters recruited from the dregs of the convicts took to the bush and terrorized the settlers with their thefts, highway robberies, and bank raids. They were suppressed gradually by the Australian constabulary, and live now only in the yellow-backed novel for which they have furnished a fertile theme.

Bushwhackers, a term applied during the Civil War to loose, irregular characters, particularly of the southwest. When at home they professed to be neutrals, sympathizing with neither army. As a mat-

ter of practice, they hid away in ambush and shot passing soldiers, or, like ordinary bandits, held up travelers for their valuables. It is difficult to draw the line between a bushwhacker, a guerilla, and a highwayman.

Business College, or **Commercial College,** a school in which students are trained to fill various positions in offices and business houses. The subjects of primary importance are bookkeeping, stenography, and typewriting, but the better business colleges offer courses in geography, the history of commerce, office methods, commerical law, banking, grammar, composition, and often German or Spanish. The business college undertakes also to place its graduates in suitable positions. So far as is known the modern business college in the United States had its origin in the work of R. M. Bartlett, who in 1846 opened in Cincinnati a private school for the purpose of teaching bookkeeping and similar subjects. Business colleges are private institutions but many public high schools and colleges offer a commercial course, including instruction on the typewriter.

Bustard, bŭs'terd, a family of game birds, somewhat resembling the turkey in appearance, but classified between the plover and the crane. There are several species, found throughout Africa, about the Mediterranean, and eastward in southern Asia, as far as Japan. The common bustard ranges along the northern shore of the Mediterranean and as far east as the open steppes of Tartary. It haunts inland plains and desert regions. It has strong, naked legs and feet and is a good flyer. It is a handsome bird with ornamental chestnut plumage, varied with black and white, and is not unlike a grouse in habits. The great bustard attains a weight of thirty pounds. An allied species is the so-called wild turkey of New South Wales. Bustards were at one time numerous in Yorkshire and on Salisbury Plain, but the last English birds were seen about 1838.

Butcher Bird. See SHRIKE.

Butler, Benjamin Franklin (1818-1893), an American lawyer, soldier, and statesman. He was a native of Deerfield, New Hampshire, and was graduated at Waterville College, Maine, in 1838. He wrote his own autobiography and reminiscences in 1892. He practiced law at Lowell, Massachusetts. He won a case for a factory girl who brought suit against one of the large cotton mill corporations. Fearing an appeal and the consequent delay, which would be quite as vexatious for the girl as losing her case, Butler attached an indispensable water wheel belonging to the firm, and placed it in charge of the sheriff. An immediate settlement of the case became thus of as much importance to the company as to his client. Later in life he defended Henry Ward Beecher in the famous suit brought by Theodore Tilton. In politics Butler was an ardent Democrat. He sided with the northern Democracy in the split at the Charleston Convention in 1860. During the Civil War Butler became a general. He held Baltimore, lost the battle of Big Bethel, and settled the question of what to do with slaves within the Union lines by coining the expression, "contraband of war." They were known as contrabands for some time. In 1862 he coöperated with Farragut in the capture of New Orleans, and was appointed commander in that city. Hearing that Union soldiers were annoyed by the spiteful remarks of women, who relied upon their sex for protection, he issued an order that any women insulting Northern soldiers with remarks should be "treated as women of the town." In this way he brought upon himself the undying hatred of Southern society women, who believed nothing too base or mean for one whom they accused even of stealing spoons. At the close of the war Butler appeared in politics as a Republican and represented a Massachusetts district twice in Congress. He made four attempts to become the Republican governor of Massachusetts, and was finally elected in 1882 as a Democrat. Harvard University refused to confer the usual degree of LL. D. on him. In 1884 he was the candidate of the Greenback party for the presidency. He was a man of great vigor, and knew his own mind well; but

he was coarse fibered and lacked the refinement that marks the true gentleman.

Butler, Nicholas Murray (1862-), an American educator. He was born at Elizabeth, New Jersey. At the age of twenty he graduated from Columbia College, and then went abroad to study in Berlin and Paris. In 1885 he became instructor in philosophy in Columbia College, and has been associated ever since with that institution, now Columbia University. Upon the retirement of Seth Low to become mayor of New York City in 1902, Butler was made its president. President Butler is the editor of *The Educational Review,* and has made many contributions to educational periodicals. He is the author of the *Meaning of Education.*

Butler, Samuel (1612-1680), an English poet. He was educated in the classic learning of the day and held various petty official positions, none of which extricated him from genteel poverty. He is known chiefly as the author of *Hudibras,* a mock heroic poem ridiculing the Puritans. Hudibras is a sort of Don Quixote in verse. The poem was intended to please the gay and dissolute court of Charles II. Quoting *Chambers,* "It received all the favor Charles could spare from his spaniels and his mistresses, and he deigned even to garnish his royal conversation with its wit. The courtiers took up the fashion; the coffeehouses and taverns followed suit, and finally the mob went into raptures in imitation of its betters. The best things have become proverbs. His mass of wit has been grated down into common speech, and particles of it may be found any day glittering in the talk of English plowmen and artisans." A few of these proverbial expressions are:

Divide a hair.
For every why he had a wherefore.
I smell a rat.
To look a gift horse in the mouth.
Devil take the hindmost.
Make the fur fly.
Made his mouth to water.
Spick and span new.
Spare the rod and spoil the child.
Work before you rest.
Count their chickens ere they're hatched.
As ye sow, ye are like to reap.
True as the dial to the sun.
Look before you leap.
Shear swine, all cry and no wool.

Butte, a mining city of Montana, county-seat of Silverbow County and the largest city in the state. Butte is in one of the richest copper mining regions of the world, while there are gold and silver mines near by. The ores mined at Butte are smelted at Anaconda and Great Falls. The Montana School of Mines is located here, and there are fine public buildings, paved streets, electric lights, and an excellent street car system. The population of Butte, in 1920, that is of the municipality, was 41,611, but if its suburbs be included these figures are nearly doubled.

Butter, the fatty portion of milk. Freshly churned butter contains about 85 per cent of fat and 11 per cent of water. The remaining 4 per cent consists of curd, animal salt, a trace of sugar, etc. Historically, butter from the milk of the cow is quite modern. The first butter was made from the milk of the goat, reindeer, camel, and yak. A large part of the world has never seen butter of any kind. A very small portion is familiar with the butter made from the milk of the cow.

Homemade or dairy butter is produced by first setting the milk to cool in crocks or pans. The fat of milk is contained in small, oily globules much lighter than water. When milk stands, the heavier portion settles to the bottom of the pan, causing these globules of fat to rise to the surface where they may be skimmed off in the form of cream. Under the setting or gravity system it is claimed that from one per cent to one-half per cent of the cream remains in the skim milk of shallow pans, but that with cans twelve or eighteen inches deep, set in cool water, the remainder may be decreased to one-fifth per cent, or a loss of but three ounces to 100 pounds of butter.

The ancients churned the cream of goats by shaking it in sacks. Sometimes the sack was swung like a hammock. The Armenian dairymaid still hangs her goatskin churn by cords beneath a tripod and swings it to and fro by hand. A small amount of butter may be made by whipping with a spoon. The old-fashioned

churn, with a dasher raised up and down by a handle, is still fresh in memory. Modern churns consist of a series of paddles on a common axis caused to rotate by means of a crank. The principle is the same in all churns. By agitation of the cream, the fatty globules are jounced together and made to cohere. Churning should cease as soon as the butter collects into grains the size of wheat. It may then be taken from the buttermilk, worked with a paddle, and salted to taste. Working drives out the remnant of buttermilk, but care should be taken not to destroy the grain of the butter and make it greasy.

Dairy methods have changed greatly within the past twenty-five years. Creameries or factories now make about one-third of the total amount of butter produced in the United States. The cream is obtained from the milk by a separator consisting essentially of a series of tubes, centering like the spokes of a wheel in a central cavity. The machine is filled with milk and rotated with great rapidity. The heavier parts of the milk are driven by centrifugal force toward the outside of the machine, forcing the lighter oily globules into the center, whence they are drawn out and sent to the butter worker. A good separator will lose less than two ounces of butter out of one hundred pounds. Creamery butter, like factory cheese, is produced with economy, and under proper management is uniformly of high class.

The quality of butter is dependent, of course, at all seasons, on the quality of food consumed by the cow. Some wild plants, particularly the wild leek, render milk and butter unfit for use. Clover and bran stimulate the flow of milk and yield excellent results in butter. The last United States census gives the yield of butter made on farms at 1,071,745,127 pounds, and the yield of creamery butter at 420,954,016 pounds, making an annual total of very nearly 1,500,000,000 pounds of butter. Dairy or homemade butter is usually sent to market in prints; creamery butter in wooden firkins, or jars, or in pound bricks wrapped in oiled paper. America exports about 25,000,000 pounds annually. Denmark exports butter to the value of $35,000,000 each year. It is out of the question to estimate the quantity of butter made in the world. The average yearly exports of the butter-selling countries is practically as follows:

Argentina	6,341,589
Australia	87,894,943
Austria-Hungary	4,378,997
Belgium	3,509,265
Canada	3,673,702
Denmark	195,052,426
Finland	24,471,285
France	54,357,279
Germany	398,592
Italy	8,295,469
Netherlands	72,456,276
New Zealand	39,931,920
Norway	2,738,708
Russia	123,541,889
Sweden	47,949,953
United States	3,104,175
Other countries	5,045,000
Total	683,141,468

The butter imported yearly by butter-buying countries under normal conditions is shown in the following table:

Australia	80,111
Belgium	12,718,269
Brazil	4,944,999
British South Africa	3,645,416
Denmark	6,240,561
Dutch East Indies	3,474,789
Egypt	2,936,170
France	10,664,973
Germany	92,815,865
Netherlands	4,491,879
Russia	1,300,061
Sweden	205,352
Switzerland	11,062,683
United Kingdom	476,805,840
Other countries	25,298,000
Total	656,454,275

See CHEESE; CATTLE; ADULTERATION.

Buttercup, a large group of flowering herbs. The Latin name, *Ranunculus,* little frog, perhaps refers to the wet places in which many kinds grow. Another name, crowfoot, has, no doubt, reference to the shape of the five-toed leaves of the most common species. Buttercup comes from the yellow color and cup-shape of the flower. The English buttercup is the plant children hold under each others' chins to see by the yellow glow "whether they love

butter." Buttercups have a simple flower, in that all parts of the flower grow entirely distinct. There are over two hundred kinds. The garden buttercup originated in Asia. Some of our native buttercups are aquatic and have thread-like leaves. The tall buttercup, a visitor from Europe, and a plague in pastures, has established itself in New England and around the western end of Lake Superior. Buttercups are usually yellow—sometimes white. The marsh marigold, virgin's bower, clematis, anemone, pasque flower with its hairy "goslings," columbine, and even the larkspur, all belong to the crowfoot family.

Butter-Fat, in dairying, the fatty or butter-producing portion of milk. Butter-fat exists in the form of small globules from 1/15000 to 1/2500 of an inch in diameter. The globules can be seen in a drop of milk placed under a microscope. The globules weigh .93 as much as water; the rest of the milk weighs more than water, If milk be allowed to stand quietly, the settling of the milk forces most of these globules to rise to the surface, where they form cream. The amount of fat in the average milk of the different breeds of cattle, expressed in percentages, according to tests made at the New York Agricultural Experiment Station, is:

Holstein-Friesian	3.4
Ayrshire	3.6
Shorthorn	4.4
Devon	4.6
Guernsey	5.3
Jersey	5.6

Jersey milk is richest in butter-fat. Twenty-five Jersey cows exhibited for 120 days at the Louisiana Purchase Exposition at St. Louis, 1904, produced a daily average of 1.9 pounds of butter-fat per cow. This made an average of 2.3 pounds of butter or 6,841.6 pounds of butter for the twenty-five cows in 120 days.

There is great diversity in the richness of the milk produced by different cows of the same breed, in the milk produced at different times of the day, and in the milk produced by different kinds of feed. The milk of some Holsteins contains more fat than the milk of some Jerseys. A famous Holstein cow, Colantha 4th's Johanna, tested by the Michigan Agricultural Experiment Station, produced 28.176 pounds of butter-fat in 7 days; 110.883 pounds in 30 days; 208.398 pounds in 60 days, and 998.256 pounds in a year.

Morning milk ordinarily contains a larger percentage of fat than evening milk. Clover and bran and green bluegrass pasture favor the production of milk having a high percentage of fat. The creameries that buy milk pay for the butter-fat. Farmers sending milk to a coöperative creamery are credited with the amount of butter-fat it contains.

Butterfly, a large family of insects allied to moths or millers. All butterflies have four membranous wings covered with scales, or modified hairs. The mouth parts are formed for sucking nectar and plant juices. For a general statement of the four stages in the life of a butterfly, see article on INSECTS. The stages are called, the egg, larva or caterpillar, pupa or chrysalis, and adult or butterfly. The term chrysalis applied to the pupa stage means golden. It refers to the gold spots with which the pupa of the butterfly is frequently marked.

Butterflies may be known from moths in several ways. They fly by day. Their antennae or feelers are knobbed, never pointed or curved at the tip. They hold their wings upright above the back when at rest, and the abdomen of the butterfly is slender. If all these characteristics are present, the insect is a butterfly, not a moth.

Caterpillars live on foliage. The adults are provided with long, coiled sucking tubes which they straighten out and use to draw nectar from flowers. There are not less than 30,000 kinds of butterflies. South America is butterfly headquarters. Each has its favorite plant on which to deposit eggs, and each goes to its favorite flower for honey. Some are named from their color, some from the shape of their wings, and some from the locality in which they are found. The White Mountain butterfly, for instance, is found only on the tops of the White Mountains and similar peaks in Colorado. The shape and direction of the veins in the wings are depended on by entomologists in describing a species. Some

of the common names are monarch, viceroy, meadow-brown, grayling, hop-merchant, mourning-cloak, tortoise-shell, painted-beauty, admiral, Baltimore, snout, long-beak, metal-work, long-stripe, hair-streak, wanderer, blue, copper, sulphur, dog's head, orange-tip, checkered-white, cabbage, swallow-tail, and others requiring a volume to describe them.

The study of moths and butterflies is a fascinating branch of natural history. In the principal cities of Great Britain, there are museums of natural history in which cases of local butterflies are given a prominent place. Local collections are gaining in favor in America. The wing of the butterfly is very fragile. The scales are likely to be disturbed and rubbed off by handling. Former methods of pinning these fragile insects in cases have proven unsatisfactory. Specimens are broken up by handling and shaking. Mr. William D. Denton has invented a method of mounting the insect with outstretched wings between two squares of glass. A specimen mounted in this way may be handled without damage. Both sides of the wings may be seen to advantage.

Collecting has acquired commercial importance. A local collection of sixty butterflies is worth about $25. The leaf butterfly of India is worth $5; the owl butterfly of Colombia, $10; one of the Jamaica butterflies, $20. Occasionally a collector receives an extraordinary price for some rarity. A butterfly was sold to one of the Rothschilds for $3,000. It is said that Worth, the Parisian man-milliner, gives a standing order for butterflies not in his collection. He desires them in order to make a study of the combination of colors.

Although butterflies move with seeming languor, they are not easily captured. Many of them sail at heights beyond the reach of a net. The collector studies the habits of each butterfly, and knows what flowers each frequents. In this way he is able to be in the right spot when the butterfly alights on its favorite flower to sip nectar. Butterflies have queer tastes. Some species are attracted by stale fruit. A rotten banana planted in the fork of a bush proves a lure for certain species. One African species is attracted by the scent of civet.

A favorite device of the collector is to smear the trunk of a tree with a sweet mixture, such as common brown sugar and thick molasses. This mixture he moistens with beer and rum. Trees along the edge of a forest are best for the purpose. The collector passes from tree to tree with his collecting jar, and is very likely to find butterfly beauties sipping away at the sweets so intoxicated that they can be brushed into the jar before they know what he is about. A second round, made in the night with dark lantern in hand, is likely to result in the capture of moths. Many rare specimens, both of butterflies and moths, have been taken in this way. In case live specimens cannot be secured, cocoons are gathered and hatched out.

Their apparent leisure and gay colors is the basis of the expression, "butterflies of fashion," as applied to society people. Spenser, describing Minerva's wondrous needlework in the contest with Arachne, says:

Amongst these leaves she made a Butterfly,
With excellent device and wondrous slight,
Fluttering among the olives wantonly,
That seemed to live, so like it was in sight;
The velvet nap which on his wings doth lie,
The silken down with which his back is dight,
His broad outstretched horns, his hairy thighs,
His glorious colors, and his glistening eyes.

See MOTH; INSECTS; ARACHNE.

Butternut. See WALNUT.

Butterworth, Hezekiah (1830-1905), an American editor and author, whose writings are seldom surpassed in the field of juvenile literature. He was born on a farm in Rhode Island and began his career as a writer on the staff of the *Youth's Companion,* of which he became editor in 1871, holding the position until 1894. In the decade 1877-1887 he increased the circulation of the *Companion* from 140,000 to 400,000. Mr. Butterworth traveled extensively, and is widely known by his *Zig Zag Journeys,* a series of stories on travel to all parts of the world. *The Boyhood of Lincoln, In Old New England* and *The Wampum Belt* are popular historics from his pen. His published volumes number about sixty.

Buttons, well known devices used for fastening clothing together, and as ornaments. A button is secured to one edge of a garment by thread or a rivet, and is then passed through a slit, buttonhole, or loop in the other edge. It is a substitute for pins, clasps, and buckles. Buttons are of two general forms. One has from two to four perforations near the center through which the fastening thread may be passed with a needle. The other form is provided with a shank made of wire or canvas, which may be sewed to the garment. The shank is sometimes passed through the fabric and fastened on the reverse side. The shank of a shoe button is sometimes fastened to the leather with a wire stamp.

It would be difficult to name a material which has not been used in some form for buttons. Flat buttons with perforations are made chiefly of porcelain, glass, pearl, leather, vulcanized rubber, wood, brass, iron, silver, ivory, horn, tortoiseshell, bone, paper, plastic clay, vegetable ivory, etc. The latter material is the nut of a palm tree. It is turned easily and is a favorite material for buttons for suitings, owing to the fact that it is dyed readily to match any cloth whether plain, marbled, or mottled. Nine thousand tons of these nuts are imported yearly. The business of making buttons out of pearl shells has grown to be a large industry. Button making was begun in the United States as early as 1753, and was well established in the manufacturing centers of New England fifty years later. Waterbury, Connecticut; East Hampton, Massachusetts; and Newark, New Jersey, are important button manufacturing centers. Mussels abound in the Mississippi River from Fort Madison to Sabla. See PEARL.

Buzfuz, Serjeant, a pompous barrister in Dickens' *Pickwick Papers.* He becomes counsel for the plaintiff in Mrs. Bardell's famous breach of promise suit against Mr. Pickwick. He bullies his witnesses at the trial and seems especially talented in drawing, from the simplest circumstances, inferences which appear to incriminate Mr. Pickwick.

Buzzard, or **Turkey Vulture,** a bird of prey belonging to the family of American vultures. The common species ranges from Manitoba to Patagonia. In the northern part of the Mississippi Valley, the buzzard seems to be sharing the fate of other large birds. It becomes rarer from year to year, but in the south it is protected by law, and is the official scavenger of farm and town, taking care of a dead farm animal, a cat in the gutter, or of kitchen offal. It shambles out of the way of a foot passenger, but is almost as fearless as a turkey. It has a hooked yellow bill, a bare, bright red head and neck, black glossy plumage edged with brown, and a meager body about thirty inches in length. The nest, with three dirty white, chocolate-speckled eggs, is placed in a hollow stump, or on the ground like that of a turkey. A smaller species, the black vulture, performs a similar service in South America. The buzzard is a serviceable, but necessarily a revolting bird. In its flight only, the buzzard is admirable. Whether coursing with soft wing and keen eye in search of food, or soaring aloft in graceful spirals, the buzzard's flight is the poetry of motion. Buzzards see a long distance. Should a buzzard discover a carcass, his dropping would be noted by some distant neighbor, who would hurry to the scene, noticed in turn by others, and these by others still further off, until, in an incredibly short time, a large assemblage had gathered. Travelers on the plains state that saddle and bridle cannot be removed from a spent horse before a circle of impatient buzzards has formed, even though not one was in sight a moment before. See VULTURE; CONDOR; PARSEES.

Byron, George Gordon, Lord (1788-1824), an eminent English poet. His mother was a Gordon of Aberdeenshire. His father was a dissipated captain, John Byron, a man of good family, who deserted his wife soon after the birth of young George. She retired to Aberdeen and lived in a small way, sending her son to the grammar school. His mother's temper and his own appear to have prevented their living happily together. At one time she caressed him, and at another threw the poker at his head, and called

him a "lame brat," in allusion to a deformed foot. His playmates said to him, "Your mother's a fool." "I know it," was his answer. In 1798 the death of his grand-uncle, Lord Byron, left him a title, but very little property. He was sent, however, to the school at Harrow. "I soon found," wrote the head master, "that a wild mountain colt had been submitted to my management." In 1805 he entered Cambridge University where he paid little attention to study, but read omnivorously and excelled in outdoor sports. During his college residence he published a volume of verses entitled *Hours of Idleness.* It was criticized in a rasping, contemptuous manner by the *Edinburgh Review.* Byron took his time and wrote the famous onslaught known as *English Bards and Scotch Reviewers,* a satire directed against those who had criticized him. Later he himself called it "a miserable record of misplaced anger and indiscriminate acrimony." In 1809 he set out on a tour through Portugal, Spain, Greece, and Turkey. On his return he published the first two cantos of *Childe Harold.* Byron indeed disclaimed all connection between himself and Childe, but the poem reflects only too faithfully his own mental unrest and struggles. It ran through seven editions inside of a month, and as Byron said of himself, he "woke up one morning to find himself famous."

We cannot go into a discussion of Byron's moral conduct. He set at defiance all laws of marriage and morality. He rivals Burns in the facility with which he picked up illicit acquaintances and deified them in verse. In 1815 he married a Miss Millbank, but the ill sorted match was soon dissolved. He appears to have been capable of treating his wife with brutality, and she him with contempt, and yet his *Fare Thee Well,* a poem written after their separation, is one of the tenderest things in the English language.

Childe Harold was afterward extended by the addition of a third and a fourth canto. Other famous poems are the *Prisoner of Chillon, Manfred, Don Juan, Giaour, Corsair,* and *Bride of Abydos.*

In 1816 Byron left England for the continent, and resided at various cities of southern Europe. In 1823 he became interested in the struggles of Greece for independence. He raised all the money he could, and set out for Missolonghi, where he was received with great enthusiasm by the Greeks and given a military command. Before he had been able to render much service, he was seized with a fever and died April 9th. The Greeks desired to bury him there, but his remains were taken home to England. Burial at Westminster was refused on the ground of irreverence, and he was laid at rest by the village church of Hucknall near Newstead Abbey.

See MAZEPPA; CHILLON.

QUOTATIONS FROM BYRON.

There is a pleasure in the pathless woods,
There a rapture in the lonely shore,
There is society, where none intrudes,
By the deep sea, and music in its roar.
I love not Man the less; but Nature more,
From these our interviews, in which I steal
From all I may be, or have been before,
To mingle with the Universe, and feel
What I can ne'er express, yet cannot all conceal.

A thousand years scarce serve to form a state
An hour may lay it in the dust.

All who joy would win
Must share it,—happiness was born a twin.

I've stood upon Achilles' tomb,
And heard Troy doubted: time will doubt of Rome.

'Tis strange, but true; for truth is always strange,—
Stranger than fiction.

Byzantium, bĭ-zăn'shĭ-ŭm, a Greek city on the Bosporus. Constantine the Great enlarged it greatly, changed its name to Constantinople, and made it the capital of the Roman Empire (324 A. D.). At the division of the Roman Empire Byzantium became the seat of the Eastern, the Greek, and the Byzantine Empire, as it was variously called. The term Byzantine occurs frequently in connection with the churches, the art, literature, emperors, and the government of the East. Byzantine art is noted for an oriental luxuriance and coloring. In architecture the principal feature of note is the success with which round domes are supported on square bases, as in the church of St. Sophia at Constantinople. See CONSTANTINOPLE.

C

Cab, a two or four-wheeled vehicle drawn usually by one horse, and plying for hire. The cab is a closed carriage. The driver sits on an outer seat. A bus plies over a regular route and is open to all who care to enter and pay a regular fare. A cab belongs exclusively to the person who hires it, being for the time a private carriage. In all important cities cabs stand near passenger stations and near large hotels waiting for fares. There are between 15,000 and 20,000 cabs in Paris. These cabs seat two persons. The fare is thirty cents for an ordinary drive, or forty cents an hour. Tables of legal fares are posted in the cab. In case of dispute the driver may be required to drive to a police station. In London there are about 10,000 cabs. Two persons are carried a mile for a shilling, equivalent to a quarter of a dollar. The price in Berlin is a mark, about the same. American prices are much higher, but are controlled likewise by ordinance.

Cabal, kȧ-băl′, a French word signifying a set of intriguers. It so happened, in the reign of Charles II, that an intriguing ministry was composed of Clifford, Ashley, Buckingham, Arlington, and Lauderdale. From the fact that their initials form the word, they were known as the Cabal, a term now well rooted in historical writings. See Acrostic; Conway Cabal.

Cabala, kăb′ā-lȧ, the oral law of the Jewish rabbis, supposed to have been received by direct revelation and handed down from father to son by word of mouth. It is in reality a sort of occult science founded on the belief that every word, letter, and accent of the Hebrew scriptures contained some hidden meaning. The Cabalists—those versed in the cabala—claimed by interpreting these secret meanings they could perform miracles and foretell future events.

Cabbage, a plant of the mustard family. This is the plant family to which the turnip, lettuce, radish, shepherd's purse, sweet alyssum, and cress all belong. The cabbage still grows wild on the sea cliffs of the English Channel and of the Mediterranean Sea. The leaves are thick and eatable, but do not form a rosette or head. This wild cabbage, transferred to gardens and improved by cultivation, is the parent of our cabbages, cauliflowers, Brussels sprouts, and kales. Georgia collards, cultivated for greens, are the wild cabbages little changed. The Scotch kale also forms no head, and is much like the original cabbage. Cauliflower is the most changed of all, but we owe it to pretty ancient gardeners. It was well known to the Greeks and Romans. The cauliflower head is partly leaf, but is really composed in large part of enormous flower buds. The cabbage proper has a dense head of leaves. Under ordinary circumstances a cabbage forms a head one year and, if put into a cellar and reset the next spring, or if protected from freezing where it stands, produces seed the second year. The plant then dies. Cabbages produce an enormous number of seeds. A single plant will not infrequently have seed enough to furnish plants for twenty-five acres. Cabbages will not head during hot weather, and for that reason judgment is needed in planting varieties that are well headed before midsummer, or varieties that head late in the season. Cabbage seed is usually sown in window boxes or hotbeds, and the young plants are transplanted when about three inches high. They require from 90 to 200 days, according to variety, to mature. Cabbage is an excellent preventive against some kinds of sickness, particularly scurvy. If cabbage be cut up and packed in a barrel with a liberal sprinkling of salt throughout, a weak brine is formed of the juice of the plant, and slight fermentation takes place. The product is sauerkraut.

Cabbage Worm, the most destructive enemy of the cabbage, is the cater-

pillar of a small white butterfly. The worms are of a bluish-green color and about an inch and a half long. They feed upon the tender leaves of cabbage and lettuce and will attack other plants. Unless checked, they may destroy a field of cabbage in a few days. There are three species but they bear a close resemblance. They can be destroyed by spraying the plants with kerosene emulsion before the heads form.

Cabinet, an executive council. It consists of the leading officers of the government. The English cabinet and United States cabinet are the oldest, and are the types on which the cabinets of other countries are modeled. In the reign of Charles I the name was given for the first time to a committee of his privy council that met to arrange public business. At the present time the English cabinet consists of an indefinite number, usually about eleven. The formation of a new cabinet proceeds with outward show of courtesy and kingly authority; the monarch sends for a prominent statesman, appoints him premier, and asks him to form a government,—that is, to suggest names of suitable persons to be appointed to high official positions. The cabinet includes the premier himself, who acts also as lord of the treasury or secretary of state for foreign affairs. A secretary for war, for home affairs, for the colonies, and for India, the chancellor of the exchequer, first lord of the admiralty, the lord privy seal, the lord chancellor, the chief secretary for Ireland, postmaster general, and the president of the board of trade are the chief appointive positions, entitling the holder by custom to a seat in the cabinet.

In reality the king has no hand in the appointment of a new ministry. His part is a polite fiction, a relic of former political conditions. The prime minister is suggested by the party leaders, and the cabinet is made up by him, in consultation with these leaders. The "king's cabinet" is not his; it is the ministry of the House of Commons. It is understood that the king is not responsible for the makeup of the cabinet, and that the ministry is responsible, not to the king, but to the House of Commons. The cabinet meets in executive session and keeps no minutes. Its deliberations relate to the policy of the government. The measures to be introduced into Parliament are arranged here. Whatever differences of opinion may arise, they are not made public.

Theoretically any member of the house may introduce a measure, but unless the proposed act has the sanction of "the government," that is to say, of the ministry, it is likely to secure scant attention. When an important measure proposed by the ministry is defeated, custom requires the ministry to resign or to call for a new parliamentary election. In case of resignation, the king calls upon the leader of the opposition to form a new ministry. In case a writ is issued for a parliamentary election, the issue is clear. The candidates stand for the old ministry or for a new, and the voters decide. When the results of an election are known, the country knows ordinarily the name of the next prime minister, quite as positively as Americans know whom the Electoral College will select for president. As there may be groups of members in the House of Commons that represent minor political parties, whose support of the ministry is subject to withdrawal, a ministry may be defeated most unexpectedly. Its usefulness, practically its life, may come to an end within a few hours' time of appointment; and, on the other hand, an opponent of "the government" may wait anxiously for years before the ministry is defeated. In case the opposition in the House of Commons thinks that the government has lost the support of the House and does not know it, or is not willing to acknowledge defeat, a resolution may be introduced declaring a "want of confidence." If the resolution carries, the ministry has no help for it but to resign or call for an election.

The first American cabinet consisted of four members,—the secretary of state, of war, of the treasury, and the attorney general. The secretary of the navy was added in 1798; the postmaster general in 1829; the secretary of the interior in

1849, the secretary of agriculture in 1889, the secretary of commerce and labor in 1903, the secretary of labor in 1913. In case of death of both the President and the Vice-President, the members of the cabinet preceding the secretary of agriculture, succeed to the presidency in the order named except that the postmaster general precedes the secretary of the navy. See PRESIDENT.

Contrary to popular impression, the Constitution does not provide for a cabinet. The president is authorized to require the opinion in writing of the heads of the executive departments, and provision is made also to vest the appointment of subordinate officers in the heads of the departments; but the Constitution does not hint at the creation of a cabinet whose members meet with the president in a body and consult on matters outside of their own departments. It was not the intention of the makers of the Constitution that the policy of the government should be determined by an advisory body. In 1789 the first Congress created four departments. President Washington created the cabinet by calling the heads of these departments together for consultation. The practice is now an unwritten law.

The secretary of state is, by common consent, the leading member of the cabinet. When the cabinet meets for consultation he sits at the president's right hand. The members of the American cabinet, that is to say, the secretaries of the departments, are appointed by the president with the approval of the Senate, for four years, or for the unexpired part of a presidential term. Secretaries are removable by the president at will. Custom, unwritten law again, requires that the cabinet officer shall perform his duties in a manner satisfactory to the president. If the secretary's course in an important matter meets with the disapproval of the president, he is expected to resign. The regular salary of a cabinet member is $12,000 a year.

See PARLIAMENT; CONGRESS.

Cable, George Washington (1844-), an American author. He was born in New Orleans. When he was fourteen years old his father died. The boy was obliged to leave school to support his mother and sisters. In 1863 he enlisted in the Confederate army and proved himself a heroic soldier. After the war he returned to New Orleans, where he was occupied as a clerk, a surveyor, and a writer on the *New Orleans Picayune*. But Cable became deeply interested in the Creoles. He made himself a familiar friend in certain of the old French homes of Louisiana where a poetic instinct, coupled with family pride, had kept alive a host of old tales and traditions. Here he gathered materials for the short stories and sketches of Creole life which he began to send to *Scribner's Magazine*. These stories were collected in book form in 1879, under the title *Old Creole Days*. None of his later writings have equaled these tales in popularity. For some years Cable has resided at Northampton, Massachusetts. He is known as a lecturer, as well as a writer. He has been interested, also, in organizing a system of home study clubs. The stories of *Old Creole Days* are Cable's masterpieces. Next to these, stand the *Grandissimes* and *Dr. Sevier*. *Madame Delphine* and *Bonaventure* may be mentioned also. Cable's style is smooth and graceful, often poetical. His stories are dramatic, full of delicate humor and pathos. In the use of dialect he is a master.

With the conscience of a historian and the eye of a poet, he presents the scenes and characters with which his own life was intimately associated; he paints the reality of a quaint and picturesque life with the fascinating tints of ideal coloring.—Abernethy.

Cables, in telegraphy, wires stretched at the bottom of the ocean for the purpose of transmitting messages. In 1844 Morse made his great discovery of the electric telegraph. In 1850 a cable twenty-seven miles long was laid across the English Channel, but it chafed apart on a jagged reef after a day's service. The next year a stronger cable was laid across the channel. Its success fired Cyrus W. Field, a wealthy American merchant, with the project of laying a cable across the Atlantic. The plan was ridiculed in public journals on both sides of the ocean. In 1857,

however, two warships, one American, one British, undertook to lay a cable, starting from the Irish coast; but it parted 250 miles out at sea. Nothing daunted, Field was ready with a larger cable the next year; and it was successfully laid from Valentia, Ireland, to Heart's Content, Newfoundland. On August 8th, at 1·1 :12 A. M., Queen Victoria addressed President Buchanan in a short message beginning "Glory to God in the Highest," and President Buchanan made a suitable reply. The *London Times* reported the marvelous success of the cable, stating that "the highest exaggerations of an Arabian tale have been outdone by this simple achievement of modern times." Queen Victoria's message of ninety words required sixty-seven minutes in transmission, the sending and receiving instruments being a little imperfect. After conveying forty telegrams in twenty-three days' time, the cable ceased to work. In 1865 Field started from Valentia with a $3,000,000 cable, but it parted in mid ocean. In 1866, undismayed by the loss of three fortunes, Field was ready again with still another cable which was laid successfully July 27, 1866. The first important news was the signing of the treaty of 1866 between Prussia and Austria. At first the tariff was five dollars a word. It has now been reduced (1905) to twenty-five cents.

Submarine cables have been extended under nearly all large bodies of water. A cable was laid in the Mediterranean in 1869; in the Red Sea, 1870; the Indian Ocean, 1871; Australia was reached in 1872; New Zealand, 1876. The cable of 1866 was surrounded and guarded by 140 small wires. Each mile weighed 2,600 pounds and cost $1,500. The English cable of 1901 to Australia is 15,000 miles long. It was made in several sections. Each mile weighed 3,000 pounds and cost $1,800. The present (1905) business of the Atlantic cables amounts to something less than 20,000 messages a day, or 7,000,000 messages a year. About 35,000,000 words are transmitted at an annual charge of $7,500,000. The charge for messages to Australia is $1.18 a word. There are now about 1,700 submarine cables, with a mileage sufficient to go around the world eight times and costing about $200,000,000. They are considered a profitable financial investment at that.

Submarine cables are manufactured chiefly in England. A modern cable consists of one central copper wire, surrounded by twelve smaller ones wound rope fashion about it. The diameter of the entire twist is about one-fourth of an inch. This copper rope or core is encased in a gutta-percha covering, making the diameter about three-fourths of an inch. Hemp and canvas tape are wrapped about the gutta-percha, and an armor of steel wires is wrapped about this again, the crevices being filled up with an asphaltic cement. The cable is put up in two-mile sections, and is tested carefully for conductivity and possible leakage before it is transferred from the factory. In laying a cable the sections are stored in the ship in tanks of seawater. The section which is laid next the shore is guarded carefully to prevent possible chafing against rocks. It is laid at about the rate of five miles an hour. The working ship is in constant communication with the shore through the portion of the cable which has been laid. In case of a break or fault in a cable, electricians have now become so expert that they can locate the defect within a mile. Repair ships have in this way been enabled to grapple a broken cable within a few hundred yards of the actual break in mid ocean. Forty-one ships are kept busy laying and repairing cables in various parts of the world, so extensive has the business become. Cables have been brought up from a depth of 15,000 feet, that is to say, three miles of water. One case of repairs is on record which cost the company $50,000. The longest message on record is one of 115,000 words describing King Edward's coronation.

England owns about sixty per cent of the world's cables. The British prime minister can send a cable message around the world, by way of Ireland, Newfoundland, Vancouver, and Australia, to London again without using foreign facilities. Recent American developments are a second Pacific cable from San Francisco to

Manila, and another from Seattle to Sitka. Messages to Manila cost $2.35 a word. France ranks third in the list of cable-owning countries; Denmark, fourth; Germany, fifth. Seventeen other countries are minor owners.

See GUTTA-PERCHA; GREAT EASTERN; FIELD; MORSE; TELEGRAPHY; WIRELESS TELEGRAPHY.

Caboose, kà-bōōs′, a Dutch name for the ship's kitchen or cookroom. In the United States the name is applied to the car in which the conductor, brakeman, and other employes of a freight train ride. Each crew has its own caboose. It is fitted up frequently with bunks for sleeping, and provided with facilities for cooking or, at least, warming food. When long distance trains reach the end of a crew's run the caboose is switched off into the yard, and the caboose of the new crew put in its place for the next run. The caboose is fitted usually with a sort of observation tower from which to watch the progress of the train, and from which access may be gained through a window to the roof of the car. For real sightseeing a ride in this tower is ahead of a seat in an observation car.

Cabot, John, an Italian navigator. Little is known of his birthplace or the place of his death. He was in the employ of the English government with headquarters at Bristol where his son Sebastian, also a celebrated navigator, was born. In 1497 John and his son Sebastian sailed westward from Bristol in a single vessel. June 24, 1497, they discovered the coast of Newfoundland, or, as others think, of Labrador, and followed it south for a distance of 300 leagues as far as Florida. The English exchequer of the period records a gift of $50 "to him that found the new Isle." On the following year they revisited the coast of North America. They were the first to raise a flag on the American mainland. Their voyages are the basis on which English title to territory in the New World rested. Among the odd stories told by the sailors was one to the effect that the codfish on the banks of Newfoundland were so thick that they retarded the ships. Sebastian's part in the voyages of 1497 and 1498 has been disputed. His journeys, it is said, were all taken with his pen within the safe precincts of his father's house at Bristol. See BRISTOL.

Cabral, a Portuguese navigator, the discoverer of Brazil. He lived about 1460-1526. On the successful return of Vasco da Gama from India, Cabral was sent out to follow up the discovery. He set out from Lisbon, March 9, 1500. It was his intention to round the Cape of Good Hope, but he kept too far out in the Atlantic, and was carried by a current upon the coast of Brazil April 22, 1500. This will not seem strange if we recall that the eastern coast of Brazil is less than seventeen degrees west of the African coast, and that the route was as yet largely guesswork. Cabral took possession of the coast in the name of Portugal and sent back one of his ships with tidings. This was the basis of Portuguese claims in the New World. Continuing his voyage around Cape of Good Hope, Cabral lost four ships in a storm; yet finally reached Calicut (whence calico), India, where he erected a fort. Cabral entered into treaties with various native princes and loaded his ships with cargoes of spices, then a fortune. He returned to Lisbon July 23, 1501. His subsequent life is unknown.

Cacao, kà-kā′ō. See COCOA.

Cache, kăsh, a French word meaning a lurking hole. To cache provisions is to hollow out a hole in the ground with greater or less care in which to conceal them until needed. The ground is, of course, leveled off and all traces of digging concealed carefully, while the location of the cache is fixed in mind by some tree, stone, or natural object. This device is often employed by travelers and hunters. The half civilized Indian villagers used to cache their corn to prevent its being devoured by visiting hordes. Arctic explorers speak of caching a part of their provisions under stones or chunks of ice for use on the return trip.

Cactus (plural *cacti*), a group of peculiar plants. Aside from a few African species of doubtful relationship, the entire family of one thousand well known forms

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GIANT CACTUS

is strictly American. They extend from the western plains, through Mexico, Central America, and the West Indies, to the southern part of South America; one species is found even in Alaska, but Mexico and our states along the Mexican border are the center of the cactus region. Cacti are more readily recognized than described. They grow in many shapes. The different kinds vary in height from that of a thimble to the giant cactus, sixty feet high. They have a fibrous, woody center of considerable strength, surrounded by soft, juicy flesh, the whole inclosed by a membrane, through which evaporation goes on with extreme slowness. A cactus is planned to stand for months under a hot sun without losing the moisture of its fleshy stalks. Some species have flattened stalks; some kinds are globular, like a melon; some kinds are cylindrical, like a sack of grain. Some stems are upright; some kinds sprawl over the ground; some branch again and again, throwing out lobe after lobe, and others branch scarcely at all; but in every case the cactus is built with a view to keep what water it has and to expose very little surface to the hot air and sun. An elm tree aims to throw out leaves and expose as much surface to the air as possible. The cactus, living in a different country, where an ordinary tree would lose all its water and wilt in an hour, has shaped itself on the opposite plan. The skin of most cacti is covered with bunches of sharp spines, possibly reduced leaves, the use of which is not understood, but which inflict painful wounds if handled carelessly.

The melon cactus is something like a watermelon on end; the lower end rooted, the upper end surrounded in season by a circle of beautiful flowers. The giant cactus raises a large stem, surmounted by huge vertical branches, as bare of leaves as a huge telegraph pole.

Some kinds of cacti have become accustomed to bloom only for a few hours, and that at night, when it is a trifle cooler than in the daytime. The night-blooming cereus is often kept as a house plant. Lovers of flowers, who have seen one open, have felt that they were present at the performance of a floral mystery. The flowers of cacti generally are attractive.

The greatest service these plants render is no doubt the crumbling of lava and other rock by their roots. In this way they prepare soil for other plants, and in time convert bare rock into a vegetation-producing area. The most useful member of the family, a much branched genus, has been introduced in Mediterranean countries under the name of "the prickly pear," "Indian fig," etc. A branch placed in a crevice of pure lava will manage to make its hold good. On Mt. Vesuvius, as soon as the lava from an irruption has cooled, short branches of prickly pear cactus are placed in crevices about twenty feet apart over a large area. As soon as these have taken root and grown somewhat, the courageous genista, or Spanish broom, takes root, and soon the red-brown lava becomes a glorious bower of green leaves and yellow flowers, and the soil is prepared to receive other less hardy vegetation. At the present time (1909) some form of plant life extends nearly to the foot of the lava-cone of 1904.

This prickly pear is raised in Italy and Sicily for food. The flowers are usually yellow. The lobes are called the fruit. The fruit resembles a fig or a pear, and is about the size of a hen's egg. It is rather soft and mucilaginous, but pleasant to the taste. Herdsmen slice up the plants for their goats. In Mexico the dried plants are used for fuel. Prickly pears cut from the cactus hedge, "fish of the fence," they call them, form a considerable article of diet and are offered for sale in the city market.

One of the species of cactus, the Opuntia, is cultivated in Mexico as a host for the cochineal insect. The insect feeds upon the lobes, is killed at the proper time and dried, and from it is produced the brilliant carmine color so useful to commerce. A coloring matter for confectionery and a water-color for painting is gotten from the juice of the fruit of this same species.

Of late years various species of cacti have attracted attention as possible food for cattle. It has been noticed that cattle on the range have been fond of eating the

spineless varieties; in fact they quite exterminate these species from their range. Travelers on the plains have found the store of water in cacti stems not unwelcome.

The Arizona Experiment Station has tried the experiment of singeing off the spines from some of the prickly varieties, thus rendering it possible for the cattle to eat them. It has been found that a man with a gasoline burner can singe the spines from about five tons of cactus per day; this by burning about ten gallons of gasoline. This amount of green, succulent food is enough for a herd of 400 cattle. The Agricultural Experiment Station of New Mexico has also experimented in singeing cacti for herds on the range, and also in running the singed stems through a root cutter. Cows seem glad to devour about fifty pounds a day. With the addition of a little grain and a handful of hay, they do well on this food. It is thought to be about equal to sugar beets in feeding value.

It is thought that the spineless varieties may be planted for forage. Luther Burbank is trying to induce spiny species to grow without spines. He claims to have made considerable headway already. If the plans under way succeed, plantations of young cacti, fenced in to protect them from stock, may one day become as common in the arid region of the southwest as fields of Indian corn now are in the corn belt.

See COCHINEAL; ARIZONA; BURBANK.

Cacus, kā′kŭs, in Roman legend, a giant, son of Vulcan. He lived in Italy on Mount Aventine, one of the seven hills of Rome. When Hercules was bringing the red oxen of Geryon from Spain, he rested near the dwelling place of Cacus. The giant admired the oxen and, while Hercules slept, stole a part of them. In order that Hercules might not be able to trace them by their footprints Cacus drew them backward by the tails into his cave. This stratagem was successful, and Hercules would have lost his oxen had they not lowed in response to the lowing of the rest of the herd as Hercules drove them past the cave. Although Cacus was a giant and had three heads, Hercules strangled the monster and recovered his bright oxen. Sancho Panza, in Cervantes' *Don Quixote,* alludes to the stealing of the oxen when he says of Rinaldo, "There be greater thieves than Cacus." See HERCULES.

Caddice Fly, an insect resembling a moth. The caddice fly lays its eggs in water. The larva has the ability of spinning gummy silk. It glues together a case of pebbles, bits of wood, straw, grains of sand, fragments of shell, or anything of the sort inside of which it constructs a silk-lined nest in which to live. Some species leave this home in search of food. Others drag it about as the snail does its shell. One might see hundreds of these cases on the bottom of a brook without suspecting their nature. Some caddice worms, as the larvae are called, decorate their houses by gluing on shells, even of living snails. An astonishing proof of their ingenuity is the construction of funnel-shaped webs, fastened to stones in running water, apparently for the purpose of catching insects. When full grown the caddice worm retires into its silky nest, closes the door for a while, and emerges in due time a caddice fly. It then leaves the water at once, spreads its wings, and sports in the sunshine, a soft-bodied, hairy, moth-like creature. Caddice "worms" devour spawn and the young fry. See INSECTS.

Cade, Jack, in English history, a leader of insurrection. Little is known of his early history beyond the fact that he was an Irishman. In 1450 he placed himself at the head of 20,000 discontented laborers and artisans of Kent and marched on London, leading what would now be called an armed strike. The movement spread over a fourth of England. In response to a complaint setting forth their dissatisfaction with unequal taxes, interference with elections, and extravagance of the courtiers, the king sent an army to disperse them. In the conflict that followed Cade and his men were victorious and entered London. The most obnoxious two of the king's ministers were executed. The king promised redress of past misrule, and issued a proclamation of general amnesty. The working-

CACTI

1. "Cholla"
2. Pea-pod
3. Joint-leafed
4. Gooseberry
5, 6. Mistletoe
7, 10. Nipple
8. Golden Flowered
9, 18. Hedgehog
11, 23. Organ-Pipe
12. Giant "Sahuara"
13. Dwarf
14. Prickly-Pear
15. Night-blooming Cereus
16. Melon
17. Old Man
19. Leafy
20. Cabbage
21. Cochineal
22. Thistle

men dispersed; but Cade, despite his letter of pardon, was afterward seized and executed. His head was set up on London Bridge as a warning to reformers. In the second part of *King Henry VI,* Shakespeare represents Cade as an ignorant monster. Jack holds a court to dispose of some prisoners. The following words are addressed to unlucky Lord Say before ordering his head stricken off:

I am the besom that must sweep the court clean of such filth as thou art. Thou hast most traitorously corrupted the youth of the realm in erecting a grammar school: and whereas, before, our forefathers had no other books but the score and the tally, thou hast caused printing to be used, and, contrary to the king, his crown and dignity, thou hast built a paper-mill. It will be proved to thy face that thou hast men about thee that usually talk of a noun and a verb, and such abominable words as no Christian ear can endure to hear.

This seems merely an aristocratic sneer at a man who was trying patriotically to better the condition of the common people and to abolish shameful abuses in politics. Jack was rough and his methods were rough, but his heart was on the right side.

Cadiz, kăd′ĭz, an important seaport of Spain. It is situated on a narrow tongue of land at the southwestern extremity of Spain, midway between Gibraltar and Portugal. The city is reputed to be handsomely built. The houses are of the flat-topped, Moorish style. The harbor, one of the finest in the world, is well protected by forts. It is the chief naval station of Spain and commercially the center of its colonial trade. The city is well provided with theaters and cathedrals, and has a bull ring capable of seating 12,000 spectators. Cadiz was a flourishing Phoenician colony and was a city of importance under the Romans. At one time Cadiz, or Gades, as it was called, was the chief commercial city of the West. It absorbed the commercial business once belonging to Carthage, and was the chief port on the Atlantic Ocean, the Mediterranean Sea excepted. E. A. Freeman says, "Cadiz has kept its name and its unbroken position as a great city from an earlier time than any other city in Europe." The present population is about 70,000. See SPAIN.

Cadmium, a metallic element. It has somewhat the appearance of tin. It crackles when bent. Its chemical properties resemble those of zinc. In combination with sulphur it occurs in most zinc ores. This combination is known as greenockite, and when prepared artificially is of great use to painters who call it cadmium yellow. This sulphide of cadmium gives paint a bright yellow color of great durability. Cadmium may be obtained usually by roasting zinc-blende, as cadmium is more volatile than zinc. Our commercial supply is obtained chiefly from Belgium and Silesia. An iodide of cadmium is used in photography.

Cadmus, in Greek mythology, the grandson of Poseidon. He was the son of Agenor, king of Phoenicia, and sailed for Greece to seek his sister Europa whom Zeus had carried away. In Greece he met with many adventures. The most noted is that of killing a dragon that guarded the fountain of Ares. At the command of Athene he sowed its teeth in the earth; armed men immediately sprang up and surrounded him, as if to kill him. Athene gave him a jewel to throw among them, whereupon they fell to fighting with each other for its possession. In this way all but five perished. With the survivors, called Spartans, or the sowed, he founded the city of Thebes. To improve the inhabitants of this city, he taught them the Phoenician alphabet.

Cadmus means in Semitic speech "the man of the East," while Europa is the damsel who personifies "the West."—Taylor.

The foundation of the fable of Cadmus is this: Cadmus having slain a famous free-booter that infested Boeotia, his banditti set upon him to revenge their captain's death; but Cadmus sent a bribe, for which they quarrelled and slew each other.—Brewer.

Caedmon, kĕd′mon, an English monk. He is one of the earliest English poets. The Abbey of Whitby stands on a cliff on the northeastern coast of England It was founded by a colony of Irish monks. It was a center of learning and civilization, long before the commercial interests of England had decided upon London as a center of wealth. According to the tradition Caedmon was an ignorant cowherd

in the service of the Abbey. He listened to the singing of the monks and to their playing on the harp with a sad heart, for he had not been educated. One night, as he lay with moist eye on his rude couch, the gift of poesy came to him. He began to sing of the creation of the world and the goodness of God to man. In the morning he told the steward of the gift that had come to him. The steward led him to the Abbess Hilda. The astonished monks considered that the hand of God had been laid upon him. They made him an honored member of their order. The date of his singing is not known, but he preceded the Venerable Bede. He died about 673. His versification was long considered lost, but in 1655 a tenth century manuscript was discovered accidentally. It contained the *Paraphrase,* a biblical history of the creation, the revolt, the fall, the flood, and the exodus. The people of the *Paraphrase* seem to stand half way between the Scandinavian gods and the Puritanic types of Milton's *Paradise Lost.* It is quite possible that Caedmon's *Paraphrase* may have suggested Milton's great work. Resemblances are quite remarkable. Milton appears to have begun his *Paradise Lost* in 1658, three years after the discovery of this manuscript.

The following translation gives some idea of Caedmon's style. The first selection is from the account of the creation. The second describes Pharaoh's death:

There had not here as yet,
Save cavern-shade,
Aught been.
But this wide abyss
Stood deep and dim,
Strange to its Lord,
Idle and useless;
On which looked with his eyes
The King firm of mind,
Beheld those places void of joys;
Saw the dark clouds
Lower in eternal night,
Swart under heaven,
Dark and waste,
Until this wordly creation
Through the word existed
Of the Glory King.
The earth as yet
Was not green with grass;
Ocean-covered,
Swart in eternal night,
Far and wide the dusky ways.

The folk was affrighted,
The flood-dread
Seized on their sad souls;
Ocean wailed with death,
The mountain heights
Were with blood besteamed,
The sea foamed gore,
Crying was in the waves,
The water full of weapons,
A death-mist rose;
The Egyptians were turned back;
Trembling they fled,
They felt fear;
Would that host
Gladly find their homes;
Their vaunt grew sadder:
Against them,
As a cloud,
Rose the fell
Rolling of the waves;
There came not
Any of that host to home,
But from behind
Inclosed them
Fate with the wave.
Where ways ere lay
Sea raged.
Their might was merged,
The streams stood,
The storm rose
High to heaven;
The loudest army-cry
The hostile uttered;
The air above
Was thickened
With dying voices.
Ocean raged,
Drew itself up on high,
The storms rose,
The corpses rolled.

See MILTON.

Caesar, see'zar, **Caius Julius** (July 12, 100 B. C., to March 15, 44 B. C.), a noted Roman. Caesar's parents were wealthy. He received the usual education of the day in grammar, arithmetic, music, and physical exercises. As a young man he was fond of pleasure but ambitious. Of aristocratic ancestry, he affiliated with his uncle Marius and Cinna, opponents of the aristocracy. On the accession of Sulla to power he ordered the leaders of the people put to death. Caesar was included among the proscribed, but was spared at the intercession of wealthy friends, though Sulla protested that "in that young Caesar there were many Mariuses." Caesar left Rome and served with the army abroad until Sulla's death. He then returned to Rome, and took up politics as a trade.

With a view to pushing his political fortunes he set out in 76 B. C. for Rhodes to study oratory. His vessel was captured by pirates. He was held a prisoner until a ransom of $50,000 was paid. Upon being set free, he manned some ships, assaulted the pirates' stronghold, and crucified his former captors, as he had jestingly assured them, when in their hands, that he would do.

By various arts Caesar rose in popular favor, stepping from one office to another, until he was in a position to form a political coalition with Pompey and Crassus, the wealthiest man of Rome. This combination is known as the First Triumvirate. It was merely a private understanding between the three men by means of which they controlled the most important offices in Rome. In 58 Caesar assumed command of the Roman armies in Gaul (now France). Crassus had military charge of the East and was killed. Pompey began to negotiate with the Senate to diminish Caesar's influence by cutting down his army, and a decree was sent forth commanding him to send home part of his legions or be considered an outlaw. In this emergency Caesar marched on Rome, having, it is said, passed a night debating whether he should cross the Rubicon, a little stream which separated his province from Roman territory proper. As a matter of history, Caesar entered Rome and Pompey fled. After a series of campaigns in Spain, Thessaly, Egypt, and the vicinity of Carthage, Caesar became master everywhere.

The story of his assassination by Brutus, and Mark Antony's speech over his remains are told by Shakespeare in his *Julius Caesar;* but Shakespeare fails to note that an imperial form of government, bearing equally on all, was the nearest approach to a beneficent government possible under the circumstances. Caesar should be held in mind, not as a despot, but as a destroyer of privileges, an equalizer, and a builder. The best treatment of Caesar's life in fiction is in the novel, *A Friend of Caesar,* by William Stearns Davis.

Caesar was probably the greatest Roman that ever lived. He was tall and of a commanding presence, with a pleasing face, and keen, expressive black eyes. He dressed like a prince and had astonishing powers of physical endurance. Few men have excelled in so many different lines of thought. As a statesman he had large views for the future of Rome. As a politician he was shrewd, and knew well how to make petty sacrifices to insure future advantage. As a general his tactics, for the time in which he lived, are commended by military critics. It is said that he knew the name of every petty centurion in his army, and could call out to him by name in the heat of conflict. A leader of the most reckless bravery, his soldiers were willing to follow him anywhere. He was an indulgent commander in trifles, but a strict disciplinarian in all matters pertaining to the safety of the army. In swiftness of military movement and in point of popularity with his men Caesar is often compared to Napoleon.

Caesar dabbled in verse when a youth. While it is true that his writings are not masterpieces in the sense that those of Virgil and Horace are his *Commentaries* on the Gallic War in seven books, and on the Civil War, are considered models. In memory of much needed reform made by him in the calendar, the name of the month in which he was born was changed to Julius, our July. The German "Kaiser" and the Latin "Caesar" are the same word. The natural limit of this article forbids going into the details of the rupture between Pompey and Caesar. Nor can we undertake to draw a line between Caesar's ambition and Caesar's views of an enlightened public policy, but the reader should not miss the central idea that Caesar's contention for power was a part of the never ending struggle of the people against an aristocracy. Pompey was the chosen representative of the Senate, the champion of wealth and privilege. Caesar did not conceive the rights of man as they are interpreted today; but, as contrasted with the aristocratic Senate, he stood for democracy and for a broad, intelligent, vigorous public policy. John Fiske says, "We ought to be thankful to Caesar every day we live."

Pompey's conception was Rome, "Mistress of the World," yet a Rome governed by a coterie of men who plundered the provinces to increase their own wealth. Caesar's conception, we may believe, was a vast empire, justly ruled, an empire in all parts of which thrift, security of life and of property, and equal citizenship should prevail.

As to Caesar's methods, we must realize that he had to fight or go down. It was Pompey or Caesar,—the Senate and Pompey and Rome, or general citizenship, Caesar, and the empire. Caesar grasped the scepter and addressed himself to the problems of equal privileges—equality under Roman law for all parts of the Roman world. Had a man of Caesar's grasp been king of England, with sympathies not confined to London, the American Revolution need not have taken place.

See RUBICON; ANTONY.

Caffeine, kăf-fe'in, the active principle found in coffee. It is precisely of the same chemical composition as theine found in tea. The stimulating effect of these beverages is due to this alkaloid. The per cent of caffeine in coffee usually runs under one, while in tea it averages nearly twice that. In medicine it is used as a stimulant to respiration and circulation, but is so powerful that it should be prescribed with caution. This indicates that care should be exercised to prevent the unreasonable use of tea and coffee, particularly by the young.

Cagliostro, căl-yōs-trō, **Count,** the assumed name of an Italian adventurer, Guiseppe Balsamo (1743-1795.) He was a native of Palermo. The "count" passed himself off as a nobleman of rank. He is notorious for impositions in the capitals of Russia, England, France, and elsewhere. He was imprisoned in the Fleet of London and in the Bastille of Paris. He died in prison at Rome. See DIAMOND NECKLACE AFFAIR.

Caine, Thomas Henry Hall (1853-), an English novelist and dramatist. He was born at Runcorn, Cheshire. His education was received at the Isle of Man and at Liverpool. He became an architect, but abandoned the work for journalism. His early writings were along the line of literary criticism. In 1885 appeared his first novel, *The Shadow of a Crime.* He won no prominent notice, however, until *The Deemster* appeared in 1887. This was the first of the stories dealing with Manx life, in the delineation of which Caine is at his best. *The Deemster* is the story of a youth who, under strong provocation, commits an unpremeditated crime. He is banished in consequence to a remote part of the island. The development of his spiritual nature during this life of isolation is a striking instance of the author's power in character drawing. *The Bondman* appeared in 1890; *The Manxman* in 1894. These, *The Deemster, The Bondman,* and *The Manxman,* are the three books upon which Hall Caine's fame as a novelist must ultimately depend. *The Christian,* however, published in 1897, gave rise to so much discussion that it was for a time immensely popular. One hundred thousand copies were sold in England and as many in the United States within a year after publication. It was translated immediately into nearly all the European languages. Everywhere the motive of the book was discussed, the verdict in this country being for the most part favorable. *The Eternal City* appeared in 1901. Caine, in conjunction with Wilson Barrett, has produced two dramas, *Ben-ma-Chree,* a dramatization of *The Deemster,* and *Good Old Times.* Hall Caine's stories are full of variety in scene, character, and action. One's interest never flags. The atmosphere, however, is somber and depressing. Few of his characters are weak, but many are wicked, and some have no quality but strength which can call forth admiration.

See ISLE OF MAN.

Cairn. See BARROW.

Cairo, the capital city of Egypt. It is situated on the east or right bank of the Nile, a few miles above the apex of the Great Delta. Cairo is an Arabian city. The name is Arabian, meaning victory or the conqueror. The exact site of the city is determined by a range of hills, approaching from the direction of the Red Sea. The spur nearest the river is a position of natural military strength. In 640 an Arabic commander, a lieutenant of Ca-

liph Omar, established a town between this spur and the river. This he called the Tent. It is now known as Old Cairo. In 970 a new city was founded a little farther to the north. It was surrounded with a stone wall and a citadel was built. Later the citadel was greatly strengthened, and a well, known as Joseph's Well, was sunk in the solid rock to the level of the Nile.

The present city consists, therefore, of Old Cairo, the New Town, and suburbs. A boulevard runs northwest from the citadel to the heart of the European quarters. This is the chief business street of Cairo The European quarters contain the consulates, hotels, a fine opera house, theaters, English and German churches, and offices. Old Cairo is strictly oriental. The streets are narrow; many of them are filthy, and are lined with mud hovels. The northwest portion of the city lying on the river, rather below the rest of Cairo, forms the port of the city. A railway and wagon bridge crosses the river here.

Across the river from Old Cairo lies the suburb, Gizeh. The government buildings are here. There is also a fine zoölogical garden and museum of Egyptian antiquities. The pyramids of Gizeh lie in plain sight to the southwest. They may be reached by a tramway.

The Nilometer, a building sheltering a graduated post, used officially to note the height of the Nile, stands on a little island in the Nile.

The Mohammedan mosque is the prominent architectural feature of Cairo. There are over 500 in various states of repair. The finest mosque of all is that of Sultan Hassan. It dates from 1357. It is celebrated for the "grandeur of its porch and cornice and the delicate honeycomb tracery which adorns them." It is surmounted by a lofty minaret. From an educational point of view, Cairo is the center of the Moslem world. The chief theological school of the Moslem world is attached to the Azhar Mosque. In 1906 there were 317 professors and 9,758 Moslem students. The Moslem burying ground, just without the city, is adorned with numerous mosques. Cairo is the seat of a patriarch of the Coptic Church and of a patriarch of the Greek Church as well. It is interesting to know that the Copts use a calendar differing by 284 years from the calendar we use.

Cairo is connected with Alexandria, near one of the mouths of the Nile, by a railway 150 miles in length. There is railway communication also with Suez and with upper Egypt. A fresh-water canal leaves the Nile at this point and cuts across country to Suez. Cairo does a large business in gold and silver ornaments, in rugs, carpets, saddles, swords, daggers, boots and shoes, and clothing. The city is headquarters for a large trade with the natives of the upper Nile, and the Bedouin people of the Sudan. Large parties are organized at Cairo to visit Mecca. The population of Cairo and its suburbs in 1917 was 790,939. It is the largest city, not only in Egypt, but in all Africa.

See NILE; ALEXANDRIA; PYRAMID.

Caisson, kās'sŏn, a substructure used in building the piers of bridges. If an engineer desires to build a pier in water, in midstream, for instance, there are several devices for getting a secure foundation. It will not do to begin building on the mud of the river bottom, for the pier would be almost certain to settle to one side and become unsafe, if it did not fall. One method of reaching a deep foundation below water and mud is the employment of a caisson.

A caisson may be likened to an enormous, water-tight tub, built bottom upward where it is desired that the pier shall stand. The caisson may be built on land and towed to place, or it may be built on the spot. In either case, the bottom must be enormously strong—for the bridge builder proceeds to build his pier on the caisson. As the caisson sinks into the oozy bed of the river, air is forced into it from above by a powerful pump. In this way the chamber, as the space below the bottom is called, is prevented from filling with water and mud. Workmen in this chamber labor with pick, shovel, and wheelbarrow, excavating so as to allow the caisson to sink deeper and deeper. The earth is sent up through a central shaft. A sand pump is used for the pur-

pose. Air pressure is depended upon to keep water out; or, indeed, water may be pumped out as is done in digging a well. As fast as the caisson sinks the masonry above is built up so as to be above the level of the water. When the caisson reaches bed rock, or clay that may be depended upon to support the pier, the chamber and shaft are filled, usually with concrete, and the work is complete.

The shaft through which workmen go up and down, and through which the excavated material is removed, is provided with air locks. The air pressure in the chamber is necessarily very great. On coming out of the caisson workmen remain for a time in an anteroom, an air lock, under pressure midway between that of the caisson and the outer air. Notwithstanding this precaution workmen are prostrated, not infrequently bleeding at the nose, with pain in the stomach, and neuralgia. Sometimes paralysis sets in and death may occur.

Bridge caissons may be of enormous size. A caisson built in constructing the bridge over East River, New York, was 102 feet in diameter. It was sunk to a foundation 172 feet below the surface of the river.

See COFFERDAM.

Calabash. See GOURD.

Calais, kȧ-lā′, a seaport town of France. It is situated on the Strait of Dover, at the junction of several canals, and is the terminus of a railroad leading to Paris. It is at the narrowest part of Dover Strait and is about twenty-three and one half miles from the English port of Dover. The harbor may be entered at all stages of the tide. The greater part of the travel between London and Paris, as well as between London and other continental cities, goes by way of Dover and Calais. Nearly a quarter of a million of passengers cross the strait at this point annually. A submarine telegraph connects the two towns, and there is talk of a railroad tunnel beneath the water. Calais is an important commercial town of 60,000 people. Supplies for the London markets, including about 5,000,000 dozen eggs a year, form a considerable part of the export trade. Calais was the last French territory held by the English.

In the long wars between the English and the French Calais was considered the key of France. In 1347 it was captured by Edward III after a siege of eleven months. The story runs that he promised to spare the people of the city on the condition that six of their principal citizens should come out to him with ropes around their necks. He ordered that their heads should be cut off at once, but his queen, Philippa, fell at his feet and begged their lives. Calais was considered the "brightest jewel in the English crown." A boastful inscription was placed over one of the gates:

> Then shall the Frenchmen Calais win
> When iron and lead like cork shall swim.

Nevertheless, Calais was recaptured by the French in 1558, in Queen Mary's reign. She considered that England had suffered a national misfortune. "When I die," said she, "Calais will be found written on my heart."

Calamus. See SWEET FLAG.

Calaveras. See SEQUOIA.

Calceolaria, kăl-se-o-lā′rĭ-ȧ (Latin, little shoe), a plant from the Andes of Peru and Chile, belonging to the same family as the toad-flax, mullein, and monkey flower. The flowers are saccate, much like a lady's slipper in outside appearance. The calceolaria makes a fine house plant. The colors are rich and intense, varying from yellow to purple and violet, pure or often dotted with brown spots.

Calcium, kăl′sĭ-ŭm, an important chemical element. It ranks fifth among the elements in point of abundance, making up about four per cent of the earth's crust. It forms an important part of lime, limestone, marble, plaster of Paris, chalk, shell, pearl, bone, egg shells, coral, and glass. It is present in all hard water. It was obtained free from other elements in 1808 by Sir Humphry Davy. In a pure condition it is a silver-white metal with a brilliant luster. Ordinarily, however, it is of a light yellow color. It is harder than lead and somewhat softer than gold. Calcium is a caustic. It unites chemically with nearly all of the elements, possibly all except argon.

Calculating Machine, a device for performing the simpler arithmetical operations mechanically. The simplest and most ancient is the abacus, still in use by the Chinese. Various types have been constructed from mere adding machines to the most intricate and complicated, by which may be performed almost any operation involving numbers. Pascal, the eminent physicist, invented one in 1642. The common slide-rule would come under the head of a calculating machine. Under the name of adding-machine they have recently been greatly perfected, and now find a place in almost all business offices. Anyone may operate such a machine with but little experience, as it has a keyboard like a typewriter, with rows of keys in columns from 1 to 9. The pressing of a key marks the figure on a slip of paper. Other keys are for addition, subtraction, and in the larger machines for multiplication. The most improved types are operated by electricity, as are also some cash registers which have automatic adding attachments. Calculating devices have also been made as a part of typewriting machines. This device is very effectively used in the making out of statements.

Calculus, as commonly used, means that branch of higher mathematics which deals with quantities as capable of continuous growth by infinitely small values known as differentials. The investigation of the infinitesimal changes of variables whose relations are known is called differential calculus. When the variables themselves are to be found from the behavior of their differentials, we have integral calculus. This theory was discovered independently and almost simultaneously by Newton and Leibnitz, but the terms employed by the latter are generally used in the subject today. Calculus has been of the greatest service in the development of mathematics and its application to the problems of mechanics.

Calcutta, a noted city of British India. It is situated on the east bank of the Hoogly, a short cut from the Ganges to the sea, and is about eighty miles from the Bay of Bengal. Its wharves extend for ten miles along the Hoogly. The water front is well built with warehouses and places of business. The river is crossed by a pontoon bridge. The government house occupies six acres. Fort William, begun by Governor Clive, has been completed at a cost of $10,000,000. There are fine parks and drives, tramways, and electric lights. Outside of the modern city lie extensive native suburbs of mud huts, little better, travelers assert, than pigsties. Water obtained from the Hoogly, twelve miles up, is filtered in huge tanks. Such provision has been made for sewers as is possible in a city built on a dead level only a few feet above the river. The death rate has been reduced to about 30 per 1,000 inhabitants annually. Cholera is said never to be absent from the filthy native quarters. Rainy July and August are the healthful season; midwinter is the worst. The annual rainfall is about sixty-six inches; the mean temperature for the year about 79°.

Calcutta is the center of an extensive railway system. It is the chief port of foreign commerce, exceeding even Bombay in this respect. There are seldom fewer than 200 ships at the wharves. Calcutta is reputed to have the largest tea warehouse in the world. The export trade of the city amounts to about forty-three per cent of that of all India. It is carried on chiefly with London by way of the Suez Canal. It exceeds $250,000,000 a year. Opium is exported to China. The principal articles of export are cotton, cotton-seed, jute, wheat, tea, rice, indigo, leather, hides, furs, coffee, lac, and wool. The principal imports are cotton and woolen cloth, yarn, iron goods, and machinery. The population in 1921 was 1,263,292.

See BOMBAY; INDIA; BLACK HOLE; OPIUM; BRAHMANS.

Caledonia, an ancient name for north Scotland. The term is found in Pliny's *Natural History* and in the *Agricola* of Tacitus of 96 A. D. Tacitus describes a battle between the Roman forces and 30,000 Caledonians. They are described as fighting with bows, swords, and small shields. Agricola erected a line of forts between the Friths of Clyde and Forth with the intention of defending the remainder of the

island against the Caledonians. The name persists chiefly in poetry. A canal in the counties of Inverness and Argyle is called the Caledonian Canal. It extends from Murray Frith to Loch Eil, over sixty miles distant. It was open to navigation in 1823. It shortens the journey around the northern coast of Scotland several hundred miles. Ships of 600 tons can pass through for it is 120 feet broad at the surface, 50 feet at the bottom, and 17 feet deep. The part that is wholly artificial is 23 miles in length. At its highest point, Loch Oich, it is 94 feet above sea level.

Calendar, the orderly record of time. About the only units of time in use among savage people are the day and the moon. Such a moon is the rice moon, or moon for gathering wild rice. Another may be the sore-eyes moon, when the smoke of the tepee and glare of the snow bring on sore eyes. Religious ceremonies based on the time of the moon carried forward a time record, based on the month, far into civilization. Civilization reckons time in years. As the phases of the moon do not come out even with the end of the year, a year composed of new moons is out of harmony with a year based on the seasons.

We trace our calendar to the Egyptians. Whether they understood the revolution of the earth about the sun or not cannot be determined, but they noted the return of the sun to a certain position at regular intervals. This they fixed at 365¼ days, less a fraction. They established a system of leap years and possessed a calendar of months. This Egyptian calendar was adopted by the Romans. The pontiffs who had charge of festivals and religious observances had charge also of the official calendar. In 45 B. C. the Roman calendar had run behind nearly three months. The spring equinox was scheduled to come off in June. Caesar reformed the calendar by decreeing that the year 46, "the last year of confusion," should be prolonged to 445 days. He further ordered that three years out of four should have 365 days, and that each fourth year,—that is, each year divisible by four,—should have 366 days. This is called the Julian Calendar. According to it, each century is about three-fourths of a day too long. The new century should begin a day sooner three centuries out of four, a loss of three days every 400 years. In this way each century began farther and farther behind time. Pope Gregory, finding that the church festivals were noticeably changing in season, decreed, 1582, that the day following the fourth of October of that year should be recorded the fifteenth instead of the fifth day of the month; and to avoid future difficulty he further decreed that the last year of each century three times out of four should not be a leap year; or, put in another way, that only such century years be reckoned leap years as are divisible by 400. Accordingly, 1700, 1800, and 1900 had but 365 days, but the year 2000 will be assigned 366 days. This is known as the Gregorian Calendar.

The Gregorian Calendar was adopted in all Catholic countries and by most Protestant countries at once. England waited until 1751; then fell in with a statute that the day following the second of September be reckoned the fourteenth instead of the third. The Gregorian Calendar is followed by the commercial world; that is to say, everywhere save in Russia, in which the Greek Church adheres to the Julian Calendar for fear of impiety in setting forward church festivals. The Russian dates are thirteen days behind ours. When Alaska was taken over the difference in reckoning was added, so that the official records of Alaska would indicate that it never had a certain thirteen days at all.

In France during the Revolutionary period, the National Convention enacted in November of 1793 that the year should be divided into twelve months of thirty days each with five days of merry-making at the end of each year. The new calendar was dated back to September 22, 1792, the day on which the new republic took form. This calendar was followed for about eight years until abolished by order of Napoleon. The names of the months were as follows:

October,	Vendemiaire,	vintage month.
November,	Brumaire,	foggy month.
December,	Frimaire,	sleet month.
January,	Nivose,	snowy month.
February,	Pluviose,	rainy month.

March	Ventose,	windy month.
April,	Germinal,	bud month.
May,	Floreal,	flower month.
June,	Prairial,	meadow month.
July,	Messidor,	harvest month.
August,	Thermidor,	heat month.
September,	Fructidor,	fruit month.

Among the odd suggestions may be mentioned that of Auguste Comte, 1849, who proposed that the months bear the names of great men as Moses, Caesar, Shakespeare, and St. Paul; and further that each day of the year be known by the name of some noted person as well. Dates thus written would be Romulus, 1905, Socrates, 1872, or such a battle was fought on Plato, 1863.

Calendering, a mechanical process by which cotton and linen textiles are "finished," that is, given a smooth surface, and, if desired, a glaze. Three ends are to be attained by calendering. First, the fabric is to be made smooth, without fold or wrinkle. Second, the threads are to be compressed until they lose their round shape and become flat. Thus they are brought into closer contact and an appearance of strength and firmness is given to the fabric. At the same time all knots and lumps caused by imperfections in the thread are flattened and smoothed. The third purpose is to give a luster or glaze to the surface of certain materials.

The agencies employed to accomplish these ends, are heat, moisture, pressure, and friction, exactly as in ordinary domestic ironing. The calendering machine contains from two to five cylinders, made of cast iron, wood, paper, or cotton, according to the purpose for which they are designed. These are so arranged that the pressure can be gauged as desired. To produce friction, the cylinders are geared to revolve at different rates of speed, so that they will rub the surfaces.

A watered or moiré effect is produced by passing a double fold of material between the cylinders. The threads of one layer press upon the others, so that they are flattened in some places more than in others, and thus reflect the light differently. Sometimes the cylinders are engraved to produce regular moiré effects, or embossed designs, such as are seen on velvet.

A machine arranged to calender fabrics while wet is used for coarse, heavy cloth, of hemp, jute, etc. It is called a water-mangle. The polish or finish of certain papers is produced by calendering.

Calends, the first day of the Roman month. The nones were the ninth day before the ides, both days included, and fell on the fifth day of the month, save in March, May, July, and October, when the nones fell on the seventh day. The ides were the eighth day after the nones, and fell on the thirteenth day of the month, save in March, May, July, and October, when they fell on the fifteenth day. Dates were reckoned backward, so many days before the ides, the nones, or the calends. The second of August was called the fourth day before the nones of August; the sixth day of August was the eighth day before the ides of August; and the fourteenth day of August was the nineteenth day before the calends of September. The calends, nones, and ides were reckoned as the first day in each case. Thus the last day of each month was called the second day before the calends of the following month. See CALENDAR.

Calgary, kăl′gȧ-ry, the largest city of the province of Alberta, Canada. This city has had a remarkable growth, which is likely to continue, as its location seems to possess all those features which make for prosperity. It is in the center of one of the greatest agricultural and ranching districts of the world, at the confluence of two rivers, the Bow and the Elbow, and is served by three railroads, the Canadian Northern, Canadian Pacific, and Grand Trunk Pacific. There are extensive coal deposits in the vicinity, and the city has mills, elevators, and packing houses. Calgary is known as a manufacturing city as well as a distributing center; also as the city of Stone Schools. The system of education is second to none in Canada. Its population in 1921 was 63,305.

Calhoun, kăl-hoon′, **John Caldwell** (1782-1850), an American statesman. He was born near Abbeville, South Carolina, of Scotch-Irish parentage. He was graduated at Yale and studied law. He was sent to Congress by his native state in 1811. He

served his state and country forty years in the House, in the cabinet, in the vice-presidential chair, and in the Senate. He advocated the War of 1812 with England. Although elected vice-president on the Jackson ticket, he was opposed to Jackson's removal of the United States funds from private banks. He also opposed Jackson's spoils system,—that of giving office in reward for political service.

Calhoun was a staunch free trader. When the protective tariff of 1828 was enacted, he was the leader of South Carolina in the famous Nullification Act. The tariff placed a duty on manufactured goods coming into this country. It was framed to protect the manufactures of New England, rather than the agricultural and cotton producing people of the South. Calhoun asserted that it was not only the privilege, but the duty, of South Carolina to prevent this act from taking effect within her borders. President Jackson declared that South Carolina should obey the laws of the nation. Carolina was equally agreed that she would not do so in this particular. A compromise measure, introduced by Henry Clay, to gradually reduce the tariff averted the difficulty.

Calhoun was the chief exponent of the doctrine of state sovereignty. He maintained that a state dissatisfied with the Union had a perfect right to withdraw peaceably, if possible; by force, if necessary. Although this doctrine had been enunciated by Massachusetts early in the history of the country, Calhoun is commonly regarded as its chief champion.

He was a man of good stuff and uncompromising integrity. His official career is consistent and honorable from beginning to end. His personal character has been praised by none more highly than by Daniel Webster, his great opponent in debate. Calhoun is considered the greatest man produced by South Carolina. His grave is near his native city.

See WEBSTER; CLAY; NULLIFICATION; JACKSON, ANDREW; SOUTH CAROLINA; CHARLESTON.

Caliban, kăl'ĭ-ban, the deformed and repulsive slave of Prospero, in Shakespeare's *Tempest.* Caliban is the opposite of Ariel in the same play. As Ariel is a spirit of the air, Caliban is a spirit of the earth. He is a sort of man-beast, brutal, coarse, malicious, devoid of moral sense; but he is not vulgar. The difference between Caliban and depraved human nature is clearly seen when he is associated with the drunken and vulgar characters, Stephano and Trinculo. The character of Caliban has furnished material for much learned discussion; possibly, however, not enough to warrant the statement made in the following quotation from Furness:

> If the depth of an impression made by an imaginary character may be gauged by the literature which that character calls forth, then must Hamlet and Falstaff admit Caliban to a place between them. An eminent professor (Wilson) has devoted a stout octavo volume to the proof that in Caliban we find the exact "link" which, in any scheme of evolution, is "missing" between man and the anthropoids; the late and honored Mr. Robert Browning has given utterance to the theological speculations which he imagined might have visited Caliban's darkened and lonely soul; and a brilliant member of the French Institute, of world-wide fame, has written a philosophical drama bearing the name of *Caliban.* No other unreal character, except the two I have mentioned, Hamlet and Falstaff, has called forth such noteworthy or such voluminous tributes.

As Schlegel says, "The delineation of this man monster is throughout marvellously profound and consistent," and, notwithstanding all, "the modesty of nature" is not outraged.—Smeaton.

Calico, a light cotton cloth of the class called print. It is chiefly used for women's and children's dresses and aprons. The name is from Calicut, a town in India, noted at one time for the manufacture of this kind of cloth. As distinguished from gingham, and other cloth dyed in the thread, calico is woven in white and is printed in desired colors on one side of the web. As distinguished from other grades of printed cotton, dimity, percale, and cretonne, calico is a coarse but light fabric. It is finished usually with starch which gives it a gloss and an appearance of firmness and "body."

The Dutch East India Company introduced calico into Europe. The art of making it gained a footing first in Holland. In 1676 calico printing became established on the Thames, near London; in 1738,

at Glasgow, where it is still a staple manufacture; and at a later date at Birmingham. The first cotton mills were erected in the United States at Pawtucket, Rhode Island, in 1790.

There are two classes of calico printers —those who weave their cloth and print it, selling their product directly to jobbers, and those who merely print the pattern at piece-price. There are two grades of calico, called 64×64 and 56×60. These figures indicate the number of threads to the inch. The first number in each set gives the number of threads in the warp, and the second number gives the number in the weft. The webs are inspected carefully for flaws, and are then stitched together in lengths of 300 yards ready for printing, which involves the various processes of singeing, bleaching, and shearing, besides the actual imprinting of patterns.

The variety of colors, tints, shades, and combinations is limited apparently only by the limits of human ingenuity. The preparation of the dyes or colored inks is a science. If a visitor were to go through any of the large cotton mills, he would come upon the chemist and his vats, and might learn much of madder styles, steam styles, indigo styles, turkey red styles, bronze styles, aniline colors, and of mordants, baths, acids, dyewoods, extracts, chromates, clays, pigments, and bleaches. The chemist in calico works needs to know not only how to make his dyes give the exact colors desired, but he must be a student of all possible coloring materials. He must know how to make his colors withstand washing, and what ingredients will give the desired color without injury to the cotton.

After printing, the cloth passes through certain finishing processes. It is starched, evened, and pressed. It is then folded into laps and is ready for market.

California, the most southerly of the Pacific states. Area, 158,297 square miles, equivalent to that of New England, New York, and Pennsylvania. It is exceeded in size by Texas only. The extreme length from northwest to southeast is about 775 miles, or more than four-fifths the distance from Chicago to New York. The greatest width is about 235 miles. Within this vast territory there is the greatest diversity of scenery, rainfall, temperature, soil, and productions. It is difficult to characterize a state in which a single county has mountain summits above the snow line at one end and orange groves at the other. It is difficult to name a fruit, flower, vegetable, or field crop found elsewhere in the United States that does not find a suitable locality somewhere in California.

MOUNTAINS. The Coast Range, from 3,200 to 5,000 feet in height, follows the coast from Oregon southward about two-thirds the length of the state. The Sierra Nevada range marks approximately the eastern bulwark of the state. Although geologists say that it has been worn down until it has lost a mile of its height, it is still the steepest and loftiest range of mountains in the United States. Mt. Whitney, 14,502 feet high, is our highest peak outside of Alaska. The lowest pass in this range is 4,995 feet above the sea level. The famous Yosemite Valley is in this range. In places the western slope falls 10,000 feet in ten miles. A belt varying in width, but averaging perhaps thirty miles, is entirely above the snow line. There are perhaps 100 small glaciers. The Siskiyou Range to which Mt. Shasta belongs, in the north, and the Tehachapi in the south are the connecting links between the Sierra Nevada and the Coast Range, and divide the interior of California into two great basins. The larger of these, drained by the Sacramento River and its branches, has but one outlet, the Golden Gate, through which its waters make their way to the Pacific Ocean.

CLIMATE. California is widely known for its attractive and healthful climate. Cyclones and hurricanes are unknown. Temperature, seasons and rainfall vary greatly in different parts of the state. Snow falls on the mountains, and places in high altitudes experience a mild winter. Other localities have a warm climate throughout the year. The rainfall varies from 58 inches in the northwestern part of the state to 3 inches in the southeast. It is about 24 inches at San Francisco and 15 inches

at Los Angeles. The rainy season extends from October or December to April or May, and the summer is the dry season.

Forest Trees. The forests of California, consisting chiefly of the redwood of the coast range, the big tree of the Sierras, the sugar pine, the Douglas spruce, the incense tree, and the silver fir, are second only to those of Oregon in value. In the southern and central parts of the state millions of pepper trees from Peru and eucalyptus from Australia have been set out for fuel and for ornament.

Agriculture. Owing to the variety of climate, practically every agricultural product of the temperate and semi-tropical regions can be raised in some of California's fertile valleys. The great live stock and wheat ranches developed in the early history of the state have been divided into small farms upon which a variety of products is raised. Barley is the leading cereal crop, followed by wheat and rice. California is the leading state in the production of beans, and second to none in its output of garden vegetables. Cotton, recently introduced into Imperial Valley, yielded 174,000 bales in 1920, and the state ranks second in the Union in the production of sugar beets. The total value of the field crops in 1919 was $284,483,000.

California is the leading fruit state. Deciduous fruits take the lead in the northern and central parts of the state, and citrus fruits in the southern part. Prunes, plums, peaches, apples, apricots, pears, cherries, figs, quinces and small fruits are raised in large quantities. The state is one of the leading grape-growing regions of the world. California produces three times as many raisins as Spain, the home of the raisin industry, and in 1919, the crop amounted to 375,150,000 pounds. Fresno county is the center of the industry.

California produces two-fifths of the world's oranges and three-fourths of those raised in the United States. Large quantities of lemons and grapefruit are also raised. The state also leads the world in the production of walnuts, and raises large quantities of almonds. The date palm, introduced into the Coachella Valley a few years ago, is proving successful and in 1919 the crop amounted to over 200,000 pounds. A large number of seedling palms in San Pasquel and Imperial valleys and in Fresno county will soon enable these sections of the state to supply a large market. The total value of the fruit crop for 1919 was $234,613,000. Refrigerator cars and ships equipped with cold storage chambers enable growers to ship the fruit long distances without injury.

Fully one-fifth of the cultivated land is under irrigation and over 5,000 miles of canals and ditches have been constructed. A government project at Yuma, when completed, will supply a large area in Imperial Valley with water. Many wells are also used.

Raising live stock and dairying are important industries and a section around Petaluma is one of the most important poultry regions in the world.

Mining. Attention was called to California first by the discovery of gold in 1848. Up to that time the United States had produced less than $12,000,000 worth of gold. The annual yield of California alone was over $30,000,000 for a long series of years, and it is still about $18,000,000 a year. The highest production for any one year was $81,294,700. Named in order of importance, the minerals produced are petroleum, gold, copper, cement, clay, asphalt, macadam. California is deficient in hardwood and in coal. Large deposits of iron ore await development.

Manufactures. The discovery of petroleum in abundance has stimulated manufacture. The leading manufactures are sugar, meats, machinery, clothing, books, liquors, baker's products, canned fruits and vegetables, and leather. Mountain torrents are now being utilized to generate electricity. It is transmitted long distances to drive machinery.

Education. California has taken advanced ground in establishing a system of education. Common schools, normal schools, technical schools, and a state university have a reputation second to none in the Union. The state university situated at Berkeley opposite San Francisco is one of

America's great state universities. Its income from various sources is about $600,000 per annum. Wealthy citizens, particularly Mrs. Phoebe Hearst, have contributed large sums for the construction of buildings and to endow chairs. Leland Stanford, Junior, University, founded by Senator and Mrs. Stanford in memory of their son, is also an institution of world-wide reputation. It stands in the front rank as to scholarship and equipment. The Lick Astronomical observatory near San Jose, and the Mt. Wilson observatory near Pasadena, are among the most noted in the world.

Sacramento is the capital of California, Los Angeles is the metropolis and San Francisco the chief business center. The population in 1920 was 3,426,336.

In 1911, California adopted woman suffrage, the referendum and the recall.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, sq. miles	156,092
Population (1920)	3,426,536
Los Angeles	576,073
San Francisco	508,310
Oakland	216,361
San Diego	74,683
Sacramento	65,857
Berkley	56,036
Long Beach	55,593
Pasadena	45,334
Fresno	45,086
Alameda	28,806
San Bernadino	18,721
No. counties	57
Members of state senate	40
Representatives	80
Salary of governor	$10,000
United States representatives	14
Presidential electors	16
Assessed valuation of property	$2,373,897,092
Bonded indebtedness	$4,881,500
Acres under irrigation	3,876,000
Agricultural Products—	
Corn, bushels	1,838,000
Wheat, bushels	17,100,000
Oats, bushels	8,325,000
Barley, bushels	43,400,000
Wine, gallons	42,500,000
Wool clip, pounds	15,500,000
Fruit shipments, cars	93,349
Beet sugar, pounds	289,494,000
Farm crops including fruits	$240,000,000
Domestic Animals—	
Horses	425,000
Mules	80,000
Milk cows	500,000
Other cattle	1,100,000
Sheep	2,200,000
Swine	500,000
Forest reserve, acres	22,000,000
Fisheries, value of	$2,861,632
Miles of railway	7,645
Manufacturing establishments	6,839
Capital invested	$282,000,000
Operatives	100,000
Raw material	$215,000,000
Output of manufactured goods	$367,000,000
Petroleum	$32,398,000
Gold	$20,237,300
Copper	$8,478,000
Cement	$4,968,000
Clay	$3,514,000
Macadam	$1,636,125
Mineral Products	$82,972,209
Savings banks deposits	$331,615,815
Teachers in public schools	10,222
Pupils enrolled	348,093
Percentage of male teachers	12.5
Average monthly salary of men teachers	$112.04
Average monthly salary of women teachers	$76.06
Average annual expenditure per pupil	$59.51

California, Gulf of, an arm of the Pacific extending between the peninsula of Lower California and the mainland of Mexico. Length, 700 miles; breadth at the entrance, 130 miles. Very little navigation is carried on there. See COLORADO RIVER; SALTON SEA.

Caligula, kȧ-lĭg′ū-lȧ, **Caius Caesar Augustus Germanicus** (12-41 A. D.), the third emperor of Rome. He was a nephew of the emperor Tiberius, whom he succeeded. He was twenty-five years old when he came to the throne. At first his rule was mild, and he won popularity by his lavish generosity, but he shortly began to display a cruelty and capriciousness which can scarcely be explained except by the theory that he was insane. His relatives and subjects were murdered or banished without cause. He amused himself while dining by having his victims tortured to death in his presence. He gave a banquet on a bridge he had built over the Bay of Baiae, and closed the festive scene by having some of the guests thrown into the sea. He declared himself a god, and made his horse a priest. He was at last assassinated by a conspiracy of his citizens. The name Caligula means Little Boot and was a nickname given him in camp on account of the soldier's boots he wore.

Caliph or **Calif,** kā′lĭf, a name given to the successor of Mohammed in the government of the faithful and in the high priesthood. The name is Arabic and means successor or deputy. The power of the caliph was absolute in both civil and religious matters, as long as he ruled in conformity with the Koran and traditions. The caliph must be a male adult, a freeman, and sane. It was expected that he be a learned divine, a powerful ruler, a just person, and that he belong to the Koreish, or tribe to which Mohammed himself belonged. Some authorities claim that he must belong to the family of Mohammed, and consequently maintain that since the first five caliphs none have been entitled to the name, but are merely governors.

The caliph in his office of high priest began the public prayers every Friday in the chief mosque, and delivered the sermon. He was obliged to lead the pilgrims to Mecca in person and to march at the head of the armies of his empire. He rode to the mosque mounted on a mule, and the Seljukian sultan held his stirrup and led the mule until notified by a sign from the caliph that he might himself mount on horseback. From a window of the caliph's palace hung always a piece of black velvet thirty feet or more in length called the "caliph's sleeve." This was kissed daily with great respect by the grandees of the court.

The succession to the caliphate often occasioned much excitement. There were various insurrections and dissatisfaction among individuals. Many caliphs met with violent deaths. In 1517 the caliphate passed over to the ninth of the Ottoman dynasty of Turkish sultans, and the title is still vested in the sultan of the Ottoman Empire. The Mohammedan princes appoint a particular officer in their respective dominions to sustain the sacred authority of the caliph. In Turkey he is called a mufti; in Persia, a sadne.

Soon after the battle of Tours, little more than a hundred years after the death of Mohammed, the world of the Moslems was rent. Islam extended from Persia and the far East, along the southern coast of the Mediterranean, and across the Straits of Gibraltar into Spain. Geographical conditions and personal ambition split this extended empire into two divisions, an eastern and a western, just as similar factors split Christendom into an eastern and a western empire. In the day of Charlemagne, we find two caliphates. Haroun-al-Rashid, the friend of Charlemagne, built his luxurious capital, Bagdad, on the Tigris; the caliph of the West built up Cordova in Spain. Historians have not failed to point out the loss of momentum that followed the Mohammedan division and the corresponding degree of safety that came to Christendom.

Calking, kauk′ing, the art of making the seams of wooden ships water-tight. By means of a dull, thin instrument and a mallet, the calker drives loose, tarry oakum, usually untwisted rope, cotton, or the like, into the cracks or seams between the planks of a ship's bottom and sides to prevent the entrance of water. After the crevice is driven full a coating of hot, melted pitch is applied to the seam.

Calla, a favorite house plant of African origin. Though called a calla lily it is not a lily at all, but a relative of jack-in-the-pulpit. A column of flowers, known as a spadix, rises in the center of a cup-shaped leaf which is prolonged at one end to a tip. This leaf or spathe is really no part of the flower, but its spotless, lily-like whiteness, in most species, has given the name. One kind, very numerous in the Nile, is called the lily of the Nile. The spathe of one species is pink, and there is a black calla as well. A small greenish calla grows wild in the tamarack swamps and streams of eastern North America, as well as in Europe and Asia. Calla plants for the house should be started in late summer from dry tubers. Botanists do not class the house plants among the callas.

Calla′o, the chief seaport of Peru. Latitude 12° S. The town is situated on a commodious harbor, and is commanded by Callao Castle, the last fortification to be held by Spain in South America. Callao has been bombarded by Chile and by Spain. In 1746 an earthquake wave carried ships ashore, landed a frigate far inland, and

drowned 4,600 people. The foreign trade of Peru centers at Callao. On an average two ocean going steamships land daily. Callao is the starting point of the Callao Oroya Railway, the loftiest railway in the world. The chief exports are cotton, sugar, leather goods, gums, guano, wool, metals, and minerals. Over half a million dollars' worth of cocaine is prepared and exported. Callao is headquarters for quinine, alpaca, and llama wool. About one-fourth of the total business of Callao is transacted with the United States. A half of it goes to London and other British ports. The population is about 40,000.

Callimachus, ka-lĭm′a-kŭs, an Alexandrian critic, poet, and grammarian. He was born at Cyrene, Africa, during the third century B. C. Under Ptolemy Philadelphus, Callimachus became chief librarian of the Alexandrian Library. He left six hymns to the gods and many epigrams. Of his elegiacs, however, which were his most famous writings, only fragments remain. Callimachus was one in whom "ingenious, elegant, and harmonious versification took the place of higher poetry." He may be regarded as the first representative of the learned poetry of Alexandria. See ALEXANDRIA.

QUOTATIONS.

A great book is a great evil.

He but sleeps
The holy sleep, say not that the good man dies.
All hail! Thrice hail! We pray thee to dispense
Virtue and wealth to us, wealth varying
For virtue's naught, mere virtue's no defense
Then send us virtue hand in hand with competence. —*Hymn to Jove.*

Callimachus takes up this part of earth,
A man much famed for poesy and mirth.
—*Epitaph of Callimachus, written by himself.*

Calliope, kăl-lī′ō-pē, in Greek mythology, the muse of epic poetry. She was the daughter of Zeus and Mnemosyne, the goddess of Memory, and the mother of Orpheus. Calliope presided over eloquence. She was represented wearing a crown of laurel, holding in one hand a trumpet, in the other an epic poem. The literal meaning of the name Calliope is beautiful voiced, whence the name of the musical instrument (commonly pronounced kăl′lĭ-ōp) beloved of the circus goer.

Callirrhoe, ka-lir′ō-ē, a name of frequent occurrence in Greek legend. Perhaps the most noted was Callirrhoe, the daughter of Achelous, a river god. She became the wife of Alcmaeon. Alcmaeon had slain his mother Eriphyle in obedience to an oracle. He then left Argos that he might be purified from his crime in the water of the Achelous. Here he met and married Callirrhoe. She knew that Eriphyle had once possessed a magic peplus and necklace, and she was determined to have them for her own. Alcmaeon had left them in Arcadia. Much against his will he went after them to please his wife, but on his return was waylaid and killed. Another Callirrhoe was a maiden of Calydon. She was wooed by Coresus, the priest of Bacchus. She rejected his suit. Bacchus, in punishment, sent madness upon the people of Calydon. An oracle declared that the plague could not be averted unless Callirrhoe was sacrificed upon the altar. But Coresus, about to perform the sacrifice, was moved by love of Callirrhoe and gave himself in her stead. Touched by his devotion, she took her own life near a well, which was called thereafter by her name. The name has been given by botanists to several species of poppy mallows, rose, red, cherry, lilac, and white, gathered by children from Minnesota to Texas. See ALCMAEON.

Callisto, in Greek mythology, an Arcadian nymph. Zeus admired Callisto and the jealous Hera changed her into a bear. Callisto was very unhappy in this new form. She was afraid of the other wild beasts, even of other bears, and she was lonely. At last she saw her own son, Arcas, approaching. She sprang forward to embrace him; but Arcas, not recognizing his mother, was about to slay her with his spear, when Zeus in pity snatched them up, and changing Arcas too into a bear, set them both in the sky, where they formed the constellations of the Great and Little Bear. Hera was incensed that such an honor should come to Callisto as a result of her punishment. She went to Tethys and Oceanus, who ruled the ocean, and begged them to help her. They could do little, but they forbade the Great Bear and the

Little Bear to come into their waters. So these two constellations move round and round in the heavens; but never sink, as do other stars, below the ocean.

There is considerable diversity in the stories of Callisto told by different writers. The foregoing account is Ovid's version of the tale. According to others, Callisto was an attendant of Artemis and was changed by her into a bear, and her son given to Maia to bring up. Another story is that Artemis herself killed the bear Callisto, and that she was transplanted to the skies as the constellation of the Great Bear, while Arcas was changed to Arcturus in the constellation called Boötes, or the Watcher of the Bear. This is consistent with the story of Cynosura, who was transformed into the Little Bear.

Milton in *Il Penseroso* alludes to the fact that the constellations of the Bear never disappear below the horizon:

> Let my lamp, at midnight hour
> Be seen in some high, lonely tower,
> Where I may oft outwatch the Bear.

See CYNOSURA.

Call of the House, a roll-call in a parliamentary body to ascertain what members are absent without leave. In the United States Congress a call may be ordered at any time. In the British Parliament the rules require that notice of several days be given. A member of Congress may be expelled for neglect to attend. In this way even a minority may require the presence of enough members to do business.

Calmucks, or **Kalmucks,** a nomadic people of Mongolian stock, inhabiting parts of Russia, Siberia, and China. They are active and well proportioned, with short chin, high cheekbones, upturned nose, oblique eyes, and scanty beard. They raise cattle, sheep, and horses. They move from place to place with change of season. Their homes are conical felt houses, which they set up in rows when they encamp. The Calmucks appeared on the Volga in 1630. They plundered for a time, but succumbed to Russian authority. A century later, 1771, to be more exact, one of their chieftains became dissatisfied and organized an exodus at a given date. They were off,—120,000 men, women, and children,—with their horses and herds for China. The Cossacks hung on their rear and other tribes harassed them on the march. A wretched horde reached the banks of a Chinese river and were settled by the Chinese emperor. The story is told graphically in De Quincey's *Flight of a Tartar Tribe.* A considerable section of the Kalmucks was unable to cross the Volga in time to join the flight. Their descendants still dwell on the Volga. The Russian and Chinese Calmucks are estimated variously at from 70,000 to 200,000.

Calomel, a white powdery compound of mercury and chlorine. It is without smell or taste, and cannot be dissolved in water, alcohol, or ether. It is prepared by heating corrosive sublimate with mercury and common salt. The drug is highly poisonous. In minute doses it is used extensively in medicine for inflammation of the serous membrane, and as a substitute for Epsom salts. Veterinary surgeons use it as a caustic to cleanse wounds, and for thrush in the frog of a horse's foot. See MERCURY; MEDICINE.

Calor'ic, a term applied to the fluid formerly considered the basis of heat. A hot body was thought to have considerable caloric in it, while a cold body had but little. Caloric was considered as being matter but without weight. This materialistic theory of heat was finally overthrown by the experiments of Rumford and Davy, who clearly showed that heat which could be produced in unlimited quantities by friction could hardly be matter. The term in a general sense is often used as synonymous with heat.

Cal'orie, the unit of heat in scientific usage, defined as the amount required to raise the temperature of one kilogram of water from 0°C to 1°C. The heat required to raise 1 gram through the same range of temperature is called a lesser calorie.

Calumet, the pipe of peace used by the Indians of North America. The bowl was made of some sort of soapstone, or of red pipestone. A long reed served for a stem. On all ceremonial occasions the calumet was passed from hand to hand. When met to make a treaty, the warriors sat

in a circle. The pipe was passed around gravely; each warrior took a few whiffs as a sign of friendship. When the terms of the treaty had been arranged the pipe went around from hand to hand again. Each warrior or chieftain took a whiff or two to indicate his agreement to the terms. If he passed the pipe without smoking he declared his dissent. In this way a vote was taken. The calumet was also passed around the circle as a token that warriors going out to battle would stand or fall together.

> Break the red stone from this quarry,
> Mould and make it into Peace-Pipes,
> Take the reeds that grow beside you,
> Deck them with your brightest feathers,
> Smoke the calumet together,
> And as brothers live henceforward!
> —Longfellow, *The Song of Hiawatha.*

Calvary, Mount, a small eminence near the city of Jerusalem on the road to Damascus. It is noted in sacred history as the place of the crucifixion of Jesus Christ. In the Hebrew original, the word was Golgotha, signifying a skull. It was the common place of execution for criminals. See JERUSALEM.

Calvin, John (1509-1564), a religious leader of the sixteenth century. A native of Picardy. As a lad he was so fond of Latin and argument that his young friends nicknamed him the "accusative case." Calvin was well educated. He was intended for the law, but was attracted by the new doctrines of the Reformation and began to preach in Paris. When active repressive measures were taken by Francis I, Calvin fled in the disguise of a workingman—finally to Geneva, where, with the exception of a short banishment spent at Strasburg, he spent the rest of his life preaching and writing. His particular doctrines are known as Calvinism. They were held by the Church of Scotland, the Puritans, and by the various branches of Presbyterianism everywhere. One of these doctrines is predestination, as opposed to the Arminian doctrine of free will. The reader may consult a *Westminster Shorter Catechism* for details.

Calvin was earnest, able, and learned. Life was too serious to be frittered away in fun. He is the hard, strong, intellectual, unyielding, unamiable, arbitrary, yet heroic Puritan of the Reformation. The one great blot on his fame is his responsibility for the judicial murder of Servetus, a reformer whose doctrines were at variance with his own, and with whom he had been engaged in bitter controversy. Servetus was a Spanish physician living at Vienne, a town on the Rhone, below Geneva. He was arrested by the Catholics there, partly on charges of heresy furnished by Calvin. Servetus escaped their hands and took refuge at Geneva. Here he was arrested by Calvin's congregation and tried for heresy. His writings were tied to his girdle and were burned with him at the stake. Such was the savagery and bitterness of theological controversy.

See PRESBYTERIANS; NETHERLANDS; CATECHISM; SERVETUS; KNOX.

Calydonian Hunt. See MELEAGER.

Calypso, kȧ-lĭp'so, in Greek mythology, a sea nymph. She was variously said to be the daughter of Atlas, of Nereus, and of Oceanus. She dwelt alone on the wooded island Ogygia, remote from both gods and men. During his wanderings after the Trojan War, Ulysses reached this island. He was hospitably received by the nymph, who straightway fell in love with him and strove by every art she knew to keep him from leaving her. She promised him perpetual youth and immortality. For seven years she was successful in holding the recreant. Then Zeus interfered and commanded Calypso to send Ulysses on his way. Having fitted him out with a raft, provisions, and a breeze to waft him on, she sorrowfully bade him farewell. Later, when Telemachus, son of Ulysses, went in search of his father, he, too, stopped at Calypso's isle. Again Calypso tried to hold her guest, but Minerva, who, disguised as Mentor, accompanied Telemachus, influenced him to withstand Calypso's allurements. The two escaped from the island by jumping from a cliff into the sea and swimming to a ship which lay becalmed at a little distance.

Camass, a liliaceous plant of North America related to the scilla of European gardens. There are several species. The name is an Indian word applied to a

species found in the moist meadows of the Rocky Mountain region and westward. It has long, thin leaves and a scape, terminating in an open raceme of blue flowers. The Indian squaws collect the bulbs in large quantities for food. Their chief rival is a pouched gopher called locally the camass-rat.

Cambric, properly a fine variety of plain woven linen. For more than a century, however, the name has been given to a thin calendered muslin, originally made in Scotland in imitation of the linen cambric. In 1520 a fine linen cloth was produced at Cambrai, or Cambray, France. It was called cambric from the name of the city. A sixteenth century historian tells us that it was "so fine that the greatest thread was not so big as the smallest hair that is." It was much used for fine ruffs, kerchiefs, shirts, and undergarments. The first cotton imitation was called cambric-muslin. Cambric is finished frequently with a luster. It is thinner and finer than common muslin. It is used for women's underwear, infants' clothing, etc. A cheap cotton fabric dyed in plain colors is also called cambric. It is used for linings and is of two varieties, kid-finished and glazed. The latter is called sometimes paper cambric. It is put up usually in rolls, as a fold is apt to form a permanent crease. See CALENDERING.

Cambridge, kām′brĭj, a city of Massachusetts. It joins Boston on the north, being just across the Charles River. Cambridge is noted as the seat of Harvard University, and of Radcliffe College for women. It has been the home of many literary and influential people and has many points of historic interest to the visitor. The old elm under which Washington took command of the American Army is here; the house which was Washington's headquarters and later the home of the poet, Longfellow; Lowell's home, Elmwood; and Mount Auburn Cemetery, one of America's most beautiful burial places. Cambridge has many large and important manufactories. Among its products are glass, shoes, rubber goods, soap, carriages, candles, chemicals, ink, blacking, furniture, pianos and organs, telescopes, boilers, and steam engines. There are mercantile houses, printing houses, and book binderies. Here was published the first book ever brought out in the United States. The schools of Cambridge rank among the best in the country. There is a large public library. Other places of interest are the Harvard Observatory and the botanical gardens. The population of Cambridge in 1920 was 109,694.

Cambridge University, one of the great English institutions of learning. It is situated at Cambridge in the shire of that name on the River Cam, about fifty miles north of London. It rivals Oxford. The town has a population of about 40,000, but it is given over chiefly to the university. There are seventeen affiliated colleges. The first, that of St. Peter's, was founded in 1284; the last, Downing, in 1800. The officers, fellows, and students of the entire university number about 4,000. The affairs of the university are administered by a chancellor and a senate. Each college has its private rules and regulations, but, in general, the college organization includes eight orders.

1. The head or master, provost or president, as he is variously called.
2. Fellows,—from twelve to sixty graduates who receive an allowance from the college funds of from $750 to $1,250 a year. They are privileged to reside or to travel. The award is usually for the period of six years.
3. Noblemen graduates,—professors, and masters of various departments who do not receive fellowships.
4. Bachelors of the various departments.
5. Fellow commoners,—students of means who pay large fees. They are entitled to wear silk robes and to dine at the fellows' table. The sons of noblemen and of wealthy men are ranked here.
6. Scholars,—students who receive a small award from the funds of the college for proficiency in scholarship.
7. Pensioners,—the main body of students.
8. Sizars,—needy students receiving assistance from various funds established for the purpose.

A master of arts of Cambridge is called a cantab, an abbreviation for the Latin name of the university.

The students of each college reside within its buildings or in lodgings approved by authority. Each college is governed by its head and fellows. A member of the faculty is not necessarily a member of the governing body. The university library contains half a million volumes. The various colleges have fine laboratories and adequate equipment for the work undertaken. To the American, however, the various rules, and especially the favors accorded wealth, seem very undemocratic and irksome. The atmosphere at Cambridge is decidedly classical. Under certain restrictions women may attend lectures, and, if successful in their examinations, may receive certificates of scholarship, but are not granted degrees. The university sends two members to Parliament. Cambridge, Massachusetts, the home of Harvard University, was named for the old town of Cambridge.

Cambyses, kăm-bī′sez, a king of the Medes and Persians, from 529 B. C. to 522 B. C.: date of his birth is unknown. He was the son of Cyrus the Great, whom he succeeded on the throne. In 525 B. C. he invaded and conquered Egypt, but expeditions against the Ammonites and Ethiopians failed. Cambyses seemed to lose his mind over these disasters. At least his display of vindictiveness and cruelty thereafter has been accounted for in that way. At last revolution broke out; Cambyses, marching from Egypt against the usurper of his throne in Persia, was accidentally wounded on the way and died in Syria. Some accounts state that he took his own life.

Camden, a city of New Jersey and the county seat of Camden County. It is situated on the Delawàre River opposite Philadelphia. Camden is an important shipping point, and has extensive ship yards. There are also foundries and manufactories of considerable importance, including among their products boots, shoes, oilcloths, paints, chemicals, textile fabrics and machinery. Camden is on the Atlantic City, the West Jersey & Seashore, and the Pennsylvania railroads. Its population in 1920 was 116,309.

Camel, the most important domestic animal of southwestern Asia. Naturalists consider the camel the most ancient cud-chewing animal in existence—an older type than the giraffe—and place it at the end of the cud-chewing group nearest the thick-skinned animals. The camel family contains two groups. The Bactrian or two-humped camel and the Arabian or one-humped camel belong to the Old World; the llama and the alpaca, the quanaco and the vicuna of the Andes, belong to the New World. The camel's colt stands about three feet high and attains a shoulder height of about seven feet at maturity. Its duration of life is forty years or over. The camel does not refuse green pasturage, but it exceeds a goat in ability to live on the dry, prickly shrubs of the desert.

Camels are wonderfully well fitted for life in hot, sandy countries. Unlike other cud-chewing animals, the camel's foot is only partially cloven. Instead of a split foot shod with two hoofs, like those of a deer or an ox, the two toes of a camel rest on a broad, leathery, elastic pad that serves as a kind of "sand shoe," and enables the camel to walk with ease over the soft sands of Arabia and the Sahara, where a hoofed animal sinks ankle deep at every step. The extreme tips of its toes are separated, and are shod with reduced hoofs much like claws. The camel's backbone is entirely regular. Its hump is not a deformity of the spine but a storehouse. When forage is plentiful, the camel stores up fat and muscle in its hump to be drawn on for strength during long journeys or time of food scarcity. During hard trips these humps become empty, and must be restored by three or four months of rest and abundance before severe service is again undertaken. Long, thick, silky eye-lashes serve as a protection against the white glare of the sand and keep out whirling dust. The camel's nostrils are long, narrow slits. During a sand storm a camel lies down, stretches out his long neck on the sand, closes his eyes and nostrils, and waits for the suffocating dust cloud to blow past. Another wonderful provision of nature is a system of folds or water pouches in the walls of the first and second stomach. The largest of these pockets is not over three inches in diameter, but they

Dromedary. CAMELS. Two-humped Bactrian camel.

Alpaca. Llama. Vicuña.

ANIMALS OF THE CAMEL FAMILY.

are numerous and, when filled from the stomach by a drink at some oasis, they will serve their owner at need for a journey of four or five days to the next water supply. The strength of a camel's back is proverbial. Their ordinary capacity for carrying burdens is twice that of a packhorse, and the Bactrian camel is credited with carrying 1,000 or even 1,500 pounds for short distances. Of the two camels, the Arabian is lighter and better adapted to the deep sand and extreme heat of Syria and Africa; the Bactrian is a coarser, stronger animal, better fitted for the mountain passes, stony pathways, and cold winters of central Asia.

Camels are uncouth, awkward, and ill-tempered. They lack the docility of the ox, and do not possess the intelligence and the affectionate disposition of the horse; but without them large tracts of the Old World would be uninhabitable. Their milk and the flesh of the young serve the Arab for food; he uses their dung for fuel; he manufactures rugs, ropes, garments, and tents from their hair; and he uses their hide for water bags and furniture. In a land where boats are unknown and roads are impossible, the Arab carries his family and his wares on the backs of camels. Thus this faithful animal furnishes food, fuel, shelter, and transportation for millions of people.

Prior to the Civil War a number of camels were imported for use in transporting army supplies in the "Great American Desert." The experiment was reported successful. Some descendants of these camels, escaping the perils of Apaches and mountain lions, are, it is said, still to be found in Arizona, but the assertion rests on doubtful authority. Camels have been introduced into the arid regions of southern and western Australia, where they are used for beasts of burden. They carry bales of wool to market.

The distribution of camels, Arabia and Morocco not included, is about as follows:

Russia in Europe	225,550
Spain	2,250
British India	442,301
Cyprus	11,169
Russia in Asia	678,622
Algeria	211,279
Egypt	40,000
Sudan	132,116
Tunis	147,229
German Africa	52
Australia	4,065
Total	1,884,583

See ALPACA; LLAMA; DROMEDARY; CARAVAN.

Camel's Hair, the woolly hair shorn from the neck and back of the camel. There are two distinct grades. The under hair is fine. It is about one inch long, and is soft and silky. The outer hair, which completely covers the under hair on the neck and hump, is coarse, and is from three to four inches long. In Arabia and other eastern countries, camel's hair is woven into a variety of stuffs, and forms the chief material for clothing and housing the inhabitants. The natural color is a light brown or tan, which is one of the distinguishing characteristics of genuine camel's hair goods. The fiber imported into America and Europe is used principally for the manufacture of fine dress goods and winter underwear. The long and short hairs are sometimes separated, but more frequently they are spun together. When the cloth is woven, some of these longer hairs become untwisted and appear on the surface, giving a shaggy appearance. Genuine camel's hair fabrics are rarely seen in the American market. Two varieties of so-called camel's hair cloth are common in our markets. One is a thick, shaggy fabric, retailing at about two dollars the yard. It is manufactured usually from fine sheep's wool and may or may not have long hairs interspersed on the surface. The other is a thin, fine, wool textile named from its resemblance to the imported cashmere shawls, improperly called camel's hair shawls, and only an imitation of the material of these shawls. See CASHMERE SHAWL.

Camelot, kăm′ē-lŏt, a legendary city in England where King Arthur's palace was located. The Knights of the Round Table met here. There has been much dispute as to the site of Camelot. Shakespeare located Camelot in Wales, for the Earl of Kent in Shakespeare's *King Lear* says:

> Goose, if I had you upon Sarum plain
> I'd drive ye cackling home to Camelot.

This has been interpreted as allusion to the fact that large quantities of geese were bred on the moors in Somersetshire. Consequently, Shakespeare is quoted as authority for locating the fabulous city in Somersetshire. Others identify it with Winchester. Caxton located it in Wales.

Camelot is best known through Tennyson's use of it. The following description in prose was found among the poet's papers after his death:

> On the latest limit of the West, in the land of Lyonnesse, where save the rocky Isles of Scilly, all is now wild sea, rose the sacred Mount of Camelot. It rose from the deeps, with gardens and bowers, and palaces, and at the top of the mount was King Arthur's hall and the holy minster with the cross of gold. . . . The Mount was the most beautiful in the world, sometimes green and fresh in the beam of morning, sometimes all one splendor, folded in the golden mists of the West. But all underneath was hollow and the mountain trembled, when the seas rushed bellowing through the porphyry caves; and there ran a prophecy that the mountain and the city on some wild morning would topple into the abyss and be no more.

The Lady of Shalott begins with the lines:

> On either side the river lie
> Long fields of barley and of rye,
> That clothe the wold and meet the sky;
> And thro' the field the road runs by
> To many-tower'd Camelot.

The name Camelot is of constant recurrence in the poem. In the *Idylls of the King,* it is thus described:

> Camelot, a city of shadowy palaces
> And stately, rich in emblem and the work
> Of ancient kings who did their days in stone;
> Which Merlin's hand, the Mage at Arthur's court,
> Knowing all arts, had touch'd, and everywhere
> At Arthur's ordinance, tipt with lessening peak
> And pinnacle, and had made it spire to heaven.

See ARTHUR.

Cameo, a gem cut away so that the figure stands out in relief. It is the opposite in this respect to the intaglio in which the figure is a depression. If a cameo be pressed against wax it forms an intaglio, and, conversely, an intaglio pressed on wax forms a cameo impression. Cameo cutting is believed to have been practiced by the ancient Babylonians and Phoenicians. A cameo in an English collection, called the Cupid and Psyche, is believed to have been cut by a Greek not long after the death of Alexander the Great. The material most frequently used is the onyx and various kinds of shell. Artificial cameos are made of glass and other material. Florence, Italy, is celebrated for cameos and intaglio cutting.

Camera, the light-tight wooden box used by photographers in taking pictures. In one side is a lens through which the light from the object enters and focuses upon the sensitized plate or film in the rear. To give a clear-cut image, most cameras are made so that the lens may be moved out or in, or the box is a bellows which may be extended or shortened. The operator may thus adjust the focus by observing the image on a ground glass screen before the plate is inserted. When all adjustments are made, the exposure of the plate is effected by uncapping the lens for the time required by a mechanical device known as a shutter, controlled by a lever or pneumatic bulb.

The perfection attained in photography in recent years has made the camera a common household article. The small, portable one, known as a kodak, is familiar to all. The folding pocket camera is a boon to the tourist. See PHOTOGRAPHY.

Camera Lucida, a prism of glass held in a frame. Its faces are cut at such an angle that an object lying at one side, when viewed through the prism, seems to lie on a sheet of paper directly underneath. The instrument is much used in drawing natural objects. A pencil may be made to follow the apparent outline on the paper with ease. The pencil of light enters the prism horizontally, is totally refracted twice, and enters the eye, passing directly upward at right angles to the original direction.

Cameron, Richard (1648-1680), a Scottish covenanter. When the Scottish Stuarts on the throne of England turned to the Catholic faith, he resisted their authority openly, and took to the hills and mosshags at the head of his followers. The government put a price on his head. He and his supporters were surrounded in a moss in Ayrshire and cut to pieces. Cameron's head and hands were taken to

Edinburgh. Under the name of the Cameronians his followers were long a separate sect in Scotland. The reformed Presbyterians claim to be the lineal successors of the Cameronians. See COVENANTERS; PRESBYTERIANS.

Cameron, Simon (1799-1889), an American senator. He was a native of Pennsylvania. He learned the printer's trade, and in 1822 edited a paper in Harrisburg, supporting the candidacy of Andrew Jackson. He was elected to the United States Senate in 1845. In 1856 he joined the new Republican party formed after the repeal of the Missouri Compromise, and was again elected to the Senate. He was secretary of war, March, 1861, to January, 1862; minister to Russia, 1862-63; and again a member of the Senate 1866-77. In 1877 he resigned and was succeeded by his son, J. Donald Cameron.

Camoens, kam'ō-ĕns, **Luis de** (Portuguese spelling, camoes), (1524-1579), the most celebrated poet of Portugal. In a list of the world's great men the name of Luis de Camoëns would stand a long way from the top. For two reasons, however, his name is remembered, and his life's story is interesting. First, he is the "chief and only boast of his country." No other Portuguese poet has been celebrated outside of his own land. Moreover, the epic poem of Camoëns is the only great epic since ancient times which has a truly national subject. Camoëns was born, it is supposed, at Lisbon. His parents were of gentle birth and high social standing, but of little wealth. The family seems to have removed to Coimbra when Luis was about two years of age to escape a pestilence raging in Lisbon. Of Camoëns' early life little is known, except what may be inferred from his writings, where we learn that he wandered on the banks of the Mondego "careless and unfettered in the free license of boyhood." His education was received at the University of Coimbra, where he showed signs of poetic talent and where, it is believed, he first conceived the idea of writing a national epic.

On returning to Lisbon he was received at the court of John III, then king of Portugal. Here began the misfortunes of Camoëns' sorrowful career, due doubtless in the first instance to jealousy. The young man was honest and fearless in expressing his opinions. He was witty, cultured, possessed of poetic genius, and of some personal comeliness. He was, moreover, a favorite with the ladies of the court. He fell in love with Dona Caterina de Alāíde, a lady in waiting of the queen. Another suitor of the lady, fired with jealousy, persuaded her father to join with him, and together they procured Camoëns' banishment from court in 1547. Three years later he joined the army of Africa. He proved himself a brave soldier, but in a naval engagement before Ceuta, he lost the sight of his right eye. Then he fell into careless and dissolute ways. In 1553 he was imprisoned for wounding an equerry of the king in a street fracas. Finally he was pardoned on condition that he would at once embark for India. Fortune served him no better in the East. He wrote a bitter satire on the government and on the life of the Portuguese in India, which increased the malice felt against him. He was banished from Goa, India, to the island of Macao. Here, in a sort of rocky gallery overlooking the sea, Camoëns wrote his great epic poem. The place is called the Grotto of Camoëns. After five years he was allowed to return to Goa. On the voyage thither the vessel was wrecked. The poet saved his life by swimming, and his poem by holding the manuscript out of the water with one hand while he swam with the other. In Goa he was thrown into prison again, on unjust charges. At length, after an absence of seventeen years filled with adventure and suffering, Camoëns returned to his native country and to Lisbon. He found sad changes. His father was dead; his mother "very old and very poor"; the city's population terribly reduced by pestilence, and a young king on the throne.

At last his epic, the *Lusiad,* "dreamed of at Coimbra, commenced in banishment, continued at Ceuta, resumed at Goa and Macao, and perfected in a humble little room at Lisbon, was issued from the press

in 1572." Its succe[illegible] immense, but in equal proportion was the je[illegible]ousy and malice it aroused in other poets. The young king granted the author a pension of about twenty-five dollars, but he took with him on his expedition to Africa another poet than Camoëns to sing his triumphs. The expedition was utterly disastrous, the king was slain, and Portugal's independence was lost. Camoëns, who had borne his own troubles with fortitude, was overwhelmed by the troubles of his country. Henceforth he "went as one dreaming," and in 1579 was taken ill of fever and died in a hospital. He was buried in the Church of Santa Ana, which was later destroyed by an earthquake. Of the inscription on a marble slab erected to his memory in the church wall, the only words remembered are, "He lived poor and neglected, and so died."

Beside his epic, Camoëns was the author of many sonnets, ballads, elegiacs, and comedies. In most of them there is a strain of grief—a tragic note—born of the sufferings of a gifted man whose gifts were his own destruction. The great epic, *Os Lusiadas,* or *The Lusiad* (meaning The Portuguese), is in ten cantos. It has been translated into nearly every European language. A little over a century after its first appearance thirty-eight editions had been issued. *The Lusiad* is strictly a national epic. The idea that Vasco da Gama is its hero is unquestionably a mistake. The nation is its hero; love of country its inspiration. The framework is slight. The poet selects the most brilliant episode in Portuguese history—the discovery of the passage to India. With wonderful skill he weaves into his narrative of the discovery every memorable expedition, every splendid achievement, every heroic deed, which the history or tradition of Portugal can furnish. According to the custom of the day, he supplies a fabulous element by introducing the Olympian gods. Venus favors the Portuguese; Bacchus (Portugal was notable for its moderate use of wine) opposes them. Vasco da Gama, of course, leads the expedition, but his exploits, like all else, are praiseworthy only in that they add to his country's glory.

The Lusiad is one of the noblest monuments ever raised to the national glory of any people. —Botta.

Camomile, kăm-o-mīl, or **Chamomile,** a plant closely allied to the yarrow and ox-eye daisy. An exceedingly bitter medicine is obtained by drying the daisy-like flowers and steeping them in twenty times their weight of water. Camomile is an old-fashioned emetic and a remedy for fever. It is cultivated as a field crop in parts of England. A showy relative of the medicinal camomile, the golden marguerite, is used by florists as a border plant. May weed, an ill-scented occupant of roadsides, is a humbler and less acceptable relative. See MEDICINE.

Camorra, an Italian secret society, after the order of the Mafia. It existed in the former kingdom of Naples, and at times spread terror among the inhabitants of northern Italy and Sicily. The Camorriste, as its members are called, were accustomed to appear in public on holidays and festive occasions and extort money from the citizens, who dared not refuse them. They passed contraband goods unpunished, committed numberless murders, and could be hired for any crime, yet were so closely and secretly banded together that the law seemed powerless. Even members of the society who were arrested and imprisoned practiced extortion upon jailers and fellow prisoners, so great was the fear inspired by the organization.

Under Francis II an effort was made to put down the society and many Camorriste were transported. Those who remained formed an alliance with the Garibaldi committee and helped to expel the Bourbons. Under the new government the Camorra became a sort of political machine, at times controlling the municipal government of Naples, including among its members almost the entire body of city employes. In 1879 the Italian government interfered and an investigation was instituted. As a result of this investigation the Honest Government League was formed and the Camorriste who were candidates in the municipal elections of 1901 were defeated.

In still more recent years apprehension

has been felt in the United States and in Sicily on account of the increasing number of violent crimes, committed, it is believed, by members of the Mafia and the Camorra. From January to May, 1909, there were recorded in New York City, 424 "Black Hand" cases and 44 bomb explosions. The word Black Hand, the name of a Spanish secret society, has come to be used to designate a crime of violence committed or supposed to be committed through the medium of a criminal organization. It was estimated at that time that there were 30,000 members of the Camorra in the United States. Some investigators of the subject, however, regard the whole matter as a sort of bugaboo. They claim that the Camorra exists nowhere except in the city of Naples, that the seeming organization in this country is but a banding together at various times and places of two or three criminals or evilly disposed persons. In support of this theory it is shown that the majority of the Italians in this country are law abiding and industrious, that there are practically no Italian tramps and no Italian drunkards, and that very few are in the various penal institutions of the country on serious charges.

Campania, a region of ancient Italy. It lay on the coast of the Mediterranean between Latium and Lucania. It included Mount Vesuvius. Capua, Pompeii, and Herculaneum were Campanian cities. Modern Naples is the port and metropolis of the region. Campania was noted for agriculture and flocks. The Italians apply the name with slight modification to any plain about a city, as the Campagna of Rome, a fertile plain corresponding to ancient Latium in extent.

Campanile, kăm-pȧ-nē′la, the bell tower of Italian cities. It is usually a separate structure. The celebrated leaning tower of Pisa is a campanile. It is eight stories high, each surrounded by a row of columns. It leans thirteen feet out of the perpendicular. Other campaniles are those of Bologna, Padua, Cremona, Ravenna, and Florence. A fine Moorish bell tower erected at Seville, Spain, in 1568, is 350 feet high. It is surmounted by a bronze vane that weighs a ton and a half, yet turns easily in the wind. The campanile of St. Mark's, Venice, was 325 feet high. The figure of an angel sixteen feet tall stood on its summit. It served as a watch tower whence the lookout sighted incoming ships. It was ascended by a winding inclined plane instead of steps. Galileo made many of his observations from this tower. At one time a wooden cage hung half way up, in which prisoners were allowed to starve to death. In 1902 the tower fell with a crash. Antiquarians had a rich find in the brick, some of which was declared to have been brought from Rome as early as the first century.

In storied Venice, down whose rippling streets
The stars go hurrying, and the white moon beats,
  Stood the great Bell Tower, fronting seas and skies—
  Fronting the ages, drawing all men's eyes;
Rooted like Teneriffe, aloft and proud,
Taunting the lightning, tearing the flying cloud.
It marked the hour for Venice; all men said
Time cannot reach to bow that lofty head;
  Time that shall touch all else with ruin, must
  Forbear to make this shaft confess its dust,
Yet all the while, in secret, without sound,
The fat worms gnawed the timbers underground.
The twisting worm, whose epoch is an hour,
Caverned its way into the mighty tower;
  And suddenly it shook, it swayed, it broke,
  And fell in darkening thunder at one stroke.
The strong shaft, with an angel on the crown,
Fell running; a thousand years went down!

—Edwin Markham.

Campanula. See BELLFLOWER.

Campbell System, The. See DRY FARMING.

Campbell, Thomas (1777-1844), a British poet and miscellaneous writer. He was born at Glasgow and was educated at Glasgow University. While a student he distinguished himself for translations of Greek poetry into English verse. At the age of twenty-two he published *The Pleasures of Hope.* This poem was "written in a garret, rewritten, rearranged, and polished to perfection." It was an instantaneous success. Its author was at once offered employment by booksellers. That he was not at once successful financially seems to have been due to his own procrastination and, possibly, his own indolence. In 1805 the British government

settled a pension of £200 or $1,000 a year on him. Campbell continued to write poetry and prose. He delivered lectures on poetry. He was for ten years editor of the *New Monthly Magazine.* He died in France, and his body was interred in Westminster Abbey.

Gertrude of Wyoming was published in 1809. As a poem it was thought by certain critics to excel *Pleasures of Hope.* The scene is laid in Pennsylvania, and the poem relates a tragic story of the Revolution. The descriptions of sylvan scenes and of domestic happiness are beautiful. It is lacking in dramatic qualities and is, on the whole, too sentimental. Campbell's lyrics and the ballad, *Lord Ullin's Daughter,* are the best known of his poems.

The names and range of his principal poems are sufficiently indicated by the following quotations:

'T is distance lends enchantment to the view,
And robes the mountain in its azure hue.
—*Pleasures of Hope.*

'T is the sunset of life gives me mystical lore,
And coming events cast their shadows before.
—*Lochiel's Warning.*

And rustic life and poverty grow beautiful beneath his touch.
—*Ode to the Memory of Burns.*

Ye mariners of England,
That guard our native seas,
Whose flag has braved a thousand years
The battle and the breeze.
—*Ye Mariners of England.*

The combat deepens. On, ye brave,
Who rush to glory or the grave.
Few, few, shall part where many meet,
The snows shall be their winding sheet,
And every turf beneath their feet
Shall be a soldier's sepulchre.
—*Hohenlinden.*

Camp-Fire Girls, a national organization of girls from 12 to 20 years of age, with local groups known as Camp Fires. It was formed in 1911 by Dr. Luther H. Gulic and his wife. Its purposes as set forth in *The Book of The Camp Fire Girls* are:

To show that the common things of daily life are the chief means of beauty, romance and adventure, to aid in the forming of habits, making for health and vigor, the out-of-door habit and the out-of-door spirit; to devise ways of measuring and creating standards of women's works; to give girls the opportunity to learn 'how to keep step', to learn team work, through doing it; to help the girls and women to serve the community, the larger home, in the same ways they have always served the individual homes; to give status and social recognition to the knowledge of the mother and thus restore the intimate relationship of mothers and daughters to each other.

Fire, which stands for home, service and romance, is the symbol of the organization; its watchwords are Work, Health, Love.

Each camp fire is in charge of a Guardian who is appointed by the National Association.

There are three degrees in the membership—Wood Gatherer, Fire Maker and Torch Bearer. Any girl may join the organization by making application and signifying a willingness to comply with the law of the Camp-fire:

Seek beauty.
Give service.
Pursue knowledge.
Be trustworthy.
Hold on to health.
Glorify work.
Be happy.

To become a Fire Maker, the Wood Gatherer must be able to chant the

FIRE MAKER'S SONG.

As fuel is brought to the fire,
So I purpose to bring
My strength,
My ambition,
My heart's desire,
My joy
And my sorrow
To the fire
Of humankind.
For I will tend
As my fathers have tended,
And my father's fathers
Since time began,
The fire that is called
The love of man for man,
The love of man for God.

Ability to carry out the following lines of activity is also essential.

To help prepare and serve, together with the other candidates, at least two meals for meetings of the Camp-fire.

To mend a pair of stockings, a knitted undergarment and hem an article having a hem one yard in length.

To keep a written classified account of all money received and spent for at least one month.

To tie a square knot five times in succession correctly and without hesitation.

To sleep with open window or out-of-doors for at least one month.

To take an average of at least half an hour daily outdoor exercise for not less than a month.

To refrain from soda water, chewing gum and candy between meals for at least one month.

To name the chief causes of infant mortality in summer, and tell how and to what extent it has been reduced in American communities.

To know what to do in the following emergencies: clothing on fire; person in deep water who can not swim; open cut; frosted foot; fainting.

To know the principles of elementary bandaging and how to use surgeon's plaster.

To know what a girl of her age needs to know about herself.

To commit to memory any good poem or song not less than twenty-five lines in length. To know the words of America.

To know the career of some woman who has done much for her country or state.

To become a Torch Bearer, the Fire Maker must be known to the Guardian to be a successful leader of girls, and win 15 elective honors in addition to those required to become a Fire Maker. The Torch Bearer is the guardian's assistant.

Each Camp Fire holds a council once a month, and it should hold a meeting every week. The degrees of membership are indicated by rings, pins and other insignia, and the rites and ceremonies of the organization are similar to those originally used by the American Indians. A Camp Fire may be organized by selecting some woman who is willing to act as Guardian. She sends to the National Association in New York for a license as guardian and when this is received she can form the organization. See Boy Scouts of America.

Camphor, kăm'fer, a whitish, semi-transparent, oily substance, obtained from the wood of the camphor tree. It has a peculiar, penetrating odor, and a tough, crystalline structure. The world's supply is obtained chiefly from Japan and Formosa. Chips obtained from the root, trunk, and branches of the laurel or camphor tree are heated in closed retorts and exposed to the action of hot steam. The camphor is tried out in the form of a vapor and crystallizes on the upper part of the retort. It is sent to market usually in a crude state, and refined elsewhere. Camphor is known in science as a solid, essential oil. It floats on water. It may be dissolved in alcohol, but not readily in water. It burns with a white smoky flame. It is used in medicine, especially in cases of gout and rheumatism. It is a valuable ingredient, also, in certain liniments. The odor of camphor is obnoxious to insects. Camphor balls are stored with furs and woolens to prevent the attacks of moths. They are useful in a cabinet of insects or bird skins. Camphor wood is used also to construct insect-proof chests in which to store clothing. Formosa produces 6,000,000 pounds of camphor a year. Large groves have been discovered recently. The production is a government monopoly. The United States imports 2,000,000 pounds yearly, chiefly from Formosa and the East Indies. The world requires about 8,000,000 pounds yearly.

Campus Martius, a famous level place in ancient Rome. It lay between the more northerly of the seven hills and the Tiber. It stretched along the river for a mile or so. It must have been at least half a mile in width. The name signifies "Plain of Mars"—military plain, we might translate it. It was used for military exercises and for popular assemblies. During the reign of Augustus public buildings, booths, circuses, theaters, and temples began to encroach upon the campus; but there was still room for chariot races, horse races, ball games, and other athletic sports. It is now occupied by the chief part of modern Rome. See Rome.

Canaan, kā'nan. See Palestine.

Canada, Dominion of, the most important outlying possession of the British Empire, occupies all of North America north of the United States, with the exception of Newfoundland and Alaska. Its greatest extent from east to west is 2,700 miles, and from north to south 1,600 miles. The area is 3,729,665 square miles, including 125,755 square miles of water surface, exclusive of Hudson Bay and the Gulf of Saint Lawrence. Politically the Dominion is divided into the following provinces and territories.

Providence	Square Miles
Alberta	235,285

PARLIAMENT BUILDING, OTTAWA

The government buildings are the crowning architectural feature of Ottawa. The most imposing structure in the group is the Parliament Building, one of the finest structures in America.

DUFFERIN TERRACE, QUEBEC

Dufferin Terrace is a promenade 1400 feet long overlooking the St. Lawrence. To the right is seen a section of the lower town.

One of the sources of wealth to the farmer.

The wheat fields of Canada, when fully developed, can feed the world.

This shows the sort of homes the farmers are able to build.

British Columbia	355,855
Manitoba	251,832
New Brunswick	27,985
Nova Scotia	21,428
Ontario	407,262
Prince Edward Island	2,184
Quebec	706,834
Saskatchewan	251,700
Northwest Territories	1,242,224
Yukon	207,076
Total	3,729,665

Newfoundland, which includes Labrador, is under separate administration.

THE PEOPLE. The population of Canada in 1911 was 7,206,643. There were 22 nationalities having 2,500 or more people and several others having a smaller number. The majority of the native inhabitants are of English, Scotch and Irish descent. To these should be added 1,267,000 immigrants from the United States. English is the native tongue of about 4,000,000 of the inhabitants and French is spoken by about 2,000,000. The French people are descendants of the early French colonists, who were the only white people in the country when Canada became a possession of Great Britain in 1763. Nearly all of them are in the Province of Quebec, where they have perpetuated the language, laws and customs of their forefathers so faithfully that many sections of this province are as thoroughly French as any part of France. The population increased most rapidly between 1900 and 1911. From 1900 to 1920, 3,311,498 immigrants entered the country and about one-third of these were from the United States. A large percentage of the imimgrants went to Alberta, Saskatchewan and Manitoba. Immigration has been carefully guarded and the Canadian people are noted for their integrity, industry and thrift.

The Eastern provinces and the southern part of Ontario are the most densely populated. In 1911, 45.5 per cent of the inhabitants lived in cities and villages. The largest cities are Montreal, Toronto, Winnipeg, Vancouver, Ottawa, Hamilton and Quebec.

RELIGION. The Roman Catholic church has by far the largest number of communicants, practically all of the French people being of this persuasion. The other leading denominations are the Presbyterians, the Methodist, the Anglicans (Church of England) and the Baptists. Lutherans, Mennonites, Jews, Congregationalists and members of the Greek church are found in the English-speaking provinces.

SURFACE AND DRAINAGE. There are three great surface regions in Canada—the eastern highlands, the central plain and the Rocky Mountain highlands. The eastern highlands extend from the Atlantic Ocean to the southern extremity of Hudson Bay. The highest elevations in this region occur in Labrador, where some peaks attain an altitude of 8,000 feet (see LABRADOR PLATEAU.) This region includes the Saint Lawrence and its tributaries and the Great Lakes. South of the river, the surface is characterized by level plains, rolling or hilly country and here and there a mountain peak with a rounded summit. These mountains are isolated peaks of the Laurentian range, Montreal is built around the foot of the one best known.

The Central plain is a continuation of the great plain in the United States. It is about 700 miles wide at the international boundary and narrows to about 400 miles on the northern coast. The western portion rises gradually to meet the Rocky Mountains and the general slope is towards the northeast. This area includes the western part of Ontario, all of Manitoba, Saskatchewan and Alberta, and the northeastern part of British Columbia.

The Rocky Mountain highlands extends from the Rocky Mountains to the Pacific coast, and includes British Columbia and Yukon. The eastern slope of the mountains is gradual, but the western is steep and often precipitous. Snow-capped mountains, deep, clear lakes, roaring cataracts, glaciers, and deep gorges are some of the most striking features of this region.

A height of land beginning near the center of the Province of Quebec extends southwesterly parallel with the Saint Lawrence River and about 250 miles north of it, until it reaches the eastern boundary of Ontario. Here it turns to the west, then to the northwest, passing north of Lake Nipigon, when it bends sharply to the

southwest, crossing Minnesota to the head of the Red River of the North, where it bends to the northwest, passes diagonally across North Dakota into Saskatchewan, crossing the southern part of this province and Alberta in a westerly direction.

South of the height of land the streams belong to the Saint Lawrence system or the Mississippi system. North of it, they flow into Hudson Bay or the Arctic Ocean. The Saskatchewan-Nelson is the largest river flowing into Hudson Bay and the Athabaska-Mackenzie flowing into the Artic Ocean, has a length of 2,400 miles and is the longest river within the Dominion.

About one-half the Great Lakes belongs to Canada. The largest lakes wholly within the Dominion are Great Bear, 11,821 square miles; Great Slave, 10,719; Winnipeg, 9,459; Reindeer, 2,486; Winnipegosis, 2,086. There are thousands of small lakes varying in size from about 2,000 square miles to mere ponds. In general, the lakes are clear and cold and abound in fish.

CLIMATE. The southern half of Canada has a cool temperate climate which gradually merges into the Arctic climate of the north. All provinces east of the Rocky Mountains have long, severe winters, with a heavy snowfall, and short, hot summers. In the region immediately east of the Rocky Mountains the severity of the winters is mitigated by the Chinook winds. (See CHINOOK).

Throughout the Dominion there is sufficient rainfall for agriculture. The heaviest rains occur in British Columbia. In some parts of Alberta and Saskatchewan irrigation is profitable. Owing to the warm current in the Pacific, places on the Pacific coast have a higher mean annual temperature than those in the same latitude on the Atlantic coast.

MINERALS. Canada is well supplied with minerals; the total mineral output for 1918 was $210,204,970. The area of the coal measures exceeds 11,000 square miles and the coal mines of Nova Scotia are among the most productive in the world. Other valuable mines are worked in British Columbia and large areas of bituminous coal occur in Alberta and Saskatchewan.

The value of the total yearly output exceeds $55,000,000. Petroleum is produced in paying quantities in Ontario, and natural gas is found in nearly all the provinces, but it is most extensively used in Alberta.

Gold is found in all the provinces, but it occurs in paying quantities only in Ontario, British Columbia and Yukon. The value of the output for 1918 was $14,687,875. This was exceeded by the output of copper, which amounted to over $29,000,000, more than one-half of which came from British Columbia. Manitoba is considered to have the largest deposit of low grade copper in the world, but it has not been extensively worked. A great amount of copper is obtained in smelting ore for silver and other metals. Iron ore of a high grade exists in many localities, but little iron mining or smelting is carried on in the Dominion. Ontario produces more than half the world's supply of nickel and the mines at Sudbury are the largest in the world. The asbestos mines in the Eastern Townships, Quebec, are the most extensive in America and supply the largest portion of the asbestos used in the United States. Clay, sand and all varieties of building stone are widely distributed.

AGRICULTURE. The northern part of the country is too cold to admit of raising crops, but the southern half is a rich agricultural region. Agriculture is the leading industry and more than one-half the people are engaged in some agricultural occupation. The Maritime and eastern provinces are adapted to general farming, dairying and fruit growing. Manitoba, Saskatchewan and Alberta form one of the greatest grain-producing regions of the world and the valleys in British Columbia are suited to fruit growing and general farming.

Since the Great War, Canada has become the third country in the world in the production of wheat, being surpassed only by the United States and Argentina. The other leading crops are barley, flaxseed, hay, potatoes and vegetables. The southern part of Ontario is an excellent

fruit region and Nova Scotia is noted for its apples.

Raising live stock, and dairying are also important agricultural industries and Canada is one of the leading countries in the production of butter and cheese.

For detailed descriptions of agriculture and other Canadian industries, consult the articles on the different provinces.

The Dominion government through the Department of Agriculture, helps the farmer in every way possible. In 1887 the Department established a central experiment station at Ottawa, and Experimental farms at Nappan, N. S.; Brandon, Man.; Indian Head, Sask., and Agassiz, B. C. Since then fourteen additional stations have been established.

Forests and Lumber. The forest area of Canada is estimated at 781,000 square miles. This is the largest forest area possessed by any lumber-producing country in the world and over one-half of it is covered with merchantable timber. The area is naturally divided into three divisions.

1. The southeastern, which includes he Maritime Provinces, the Saint Lawrence valley and most of the southern part of Ontario. The trees in this division are pine, spruce, cedar, maple, ash, beech and birch.

2. The northern division, which extends across the continent to the Rocky Mountains. The southeastern part is heavily wooded—spruce, pine, tamarack and poplar being the trees found in greatest numbers. The northern part is less densely wooded and the trees consist of those hardy varieties adapted to cold climates—the larch, the spruce, and the canoe-birch.

3. The western division, extending from the Rocky Mountains to the coast. This region is densely forested with Douglas fir, black pine, white spruce and cedar.

Lumbering is an important industry in all provinces, except Prince Edward Island. Spruce is most extensively used in the eastern provinces and Douglas fir is rapidly coming into use in British Columbia. The total cut for 1917 was 4,151,708,000 board feet, valued at $83,655,000. British Columbia, Ontario and Quebec, in the order named, are the leading lumber-producing provinces. The same year 2,104,334 cords of wood were manufactured into pulp for making paper. All forests are under the care of the Dominion government or their respective provincial governments; the former wasteful practices in cutting timber are no longer allowed.

Fisheries. Canada has the most extensive fishing grounds and the largest number of food fish of any country in the world. There are 5,000 miles of coast along the Atlantic and 7,000 miles along the Pacific, all of which are excellent fishing grounds. Moreover, the Grand Banks, the most valuable of deep-sea fishing grounds, lie from 20 to 90 miles off shore. The inland waters are abundantly stocked with whitefish, lake trout, sturgeon, bass, pike and pickerel.

Cod, haddock, hake and halibut are taken in large quantities by the deep-sea fishermen, and the inshore waters yield haddock, hake, herring, mackerel, shad, flounders and sardines. Lobsters are taken in large numbers and there are valuable oyster beds in the Gulf of Saint Lawrence.

Salmon exceed all other fish on the Pacific coast in number and value, and they are taken in such quantities as to make British Columbia the leading province in the fishing industry. The total yearly output of the Dominion is valued at about $34,000,000.

Manufactures. Canada possesses the raw material and the water power necessary for the development of extensive manufactures, but other industries which yielded good returns and required less capital, and for which there was a pressing need have absorbed the attention of the people. Notwithstanding these conditions, there were, in 1915 over 27,000 manufacturing establishments, and the total value of the manufactures in 1917 was $3,015,577,940. Food products, lumber and timber products and iron and steel lead in the value of their output. Ontario, Quebec, Nova Scotia and New Brunswick, in the order named, are the leading manufacturing provinces.

Transportation and Communication. In Canada, as in the United States, the railroad has been the pioneer in settlement and civilization. Canada has the largest

railway mileage in proportion to the population of any country in the world. All the railways of importance are included in four great systems—The Grand Trunk, the Canadian Pacific, the Intercolonial and the Canadian Northern. In 1918 the total railway mileage was practically 39,000 miles. The Canadian Northern, the Intercolonial, and the Transcontinental (a part of the Grand Trunk System) are controlled by the government and are known as the Canadian National Railways.

These great systems form three trunk lines extending from coast to coast, and, with their various branches and cross-lines, they reach practically every habitable part of the Dominion. Lines owned or leased in the United States connect these systems with Portland, Me., Boston and other important cities. The Canadian Northern leads into a fertile region farther north than the other lines and its construction has opened up a large territory to settlement. This road has completed a branch from Winnipeg to Pas on the Saskatchewan River, and the Dominion government is extending the line to Fort Nelson at the head of Hudson Bay. With the completion of this Hudson Bay line, the route for shipping produce from the Northwest provinces to Europe will be shortened several hundred miles. The water route is open to navigation from the middle of July to the middle of October.

Electric lines are numerous in the more densely populated regions and every city and important town has a street railway system.

The chief waterway includes the Saint Lawrence and its lakes, tributaries and canals, which furnish an unbroken route from the head of Lake Superior to the Atlantic. The Welland Canal is being enlarged and the canals around the rapids in the Saint Lawrence will eventually be deepened so that ocean-going ships can pass to Europe. Montreal, at the head of navigation on the Saint Lawrence during the summer, and Quebec are important ports. Saint John, N. B., and Halifax, N. S., have excellent harbors open throughout the year, and lines of steamers controlled by the great railways ply between these ports and Europe. On the Pacific Coast, Prince Ruport and Victoria have excellent harbors and lines of steamers ply regularly between these ports and those of China, Japan and Australia.

The Dominion maintains an excellent mail service that reaches the remotest settlements. Its telegraph and telephone lines are ample for the needs of the people. The Canadian Air Board, under a minister of the Crown, gives attention to the developments of air planes and sea planes.

GOVERNMENT. The Dominion of Canada is a union of Federal States (called provinces) in which each province has the authority to legislature upon its own affairs, and the Federal or Dominion government holds the power to legislate on all matters affecting the welfare of the country as a whole. In Canada, the powers not specifically delegated to the Provinces are reserved to the Dominion government; in the United States, the powers not specifically delegated to the Federal government are reserved to the States. The government is based on the British North America Act of 1867, and has three departments —executive, legislative and judiciary.

EXECUTIVE DEPARTMENT. Although Canada is a democracy, it is a dependency of Great Britain; the British sovereign is nominally at the head of the government, and the Governor-General who is appointed by the King, acts as his representative. He receives $50,000 a year and his term is usually for five years. Technically he appoints all ministers, though they are selected by the Premier, and he must approve all laws passed by Parliament. He is assisted by a cabinet or council of ministers consisting of the heads of the departments of government and varying in number from 17 to 20.

The Prime Minister of Premier is at the head of the council and presides over its sessions. All members of the council must be members of Parliament. The Premier is the actual head of the government, since the Governor-General never passes upon measures without the Premier's consent.

LEGISLATIVE DEPARTMENT. The legislative department is vested in a Parliament consisting of a Senate and a House of

CANADIAN STATESMEN

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Commons. The members of the Senate are appointed by the Governor-General for life. A senator must be at least 30 years of age, a born or naturalized citizen of Canada and own at least $4,000 of real or personal property in the province from which he is appointed. Members of the House of Commons are apportioned among the provinces according to the population, and are elected by popular note. No property qualifications are neccessary but no one is eligible who is not a British subject.

Both houses have the same powers except that financial measures must originate in the House of Commons. A bill must pass three readings in each house and be signed by the Governor-General to become a law.

JUDICIAL DEPARTMENT. There are three Dominion courts—the Supreme Court, the Exchequer Court and the Admirality Court. The jurisdiction of these courts extends to cases affecting the "Crown" which is the same as the Dominion. The Judges of all provincial courts are paid by the Dominion, but their procedure and jurisdiction are determined by the provinces.

LOCAL GOVERNMENT. The government of each province is patterned after the Dominion government. A lieutenant-governor appointed by the Governor-General in Council is the chief executive officer. The heads of departments constitute the executive council. With the exception of Quebec and Nova Scotia, the provincial legislatures consist of but one house, generally styled the Assembly. Its powers do not extend beyond measures affecting its own province.

HISTORY. In 1497, John Cabot discovered the coast of North America off Labrabor and planted the standard of Great Britain on Newfoundland. It was upon this incident that Great Britain based her claim to North America. In 1535, Jacques Cartier discovered the Gulf of Saint Lawrence and the river, up which he sailed as far as the site of Montreal. He spent the winter of 1535 at Quebec, but made no permanent settlement. The first English settlement was made at Saint Johns in 1583 by Sir Humphrey Gilbert, but it was soon abandoned. Quebec founded by Samuel Champlain in 1608, was the first permanent settlement. Until his death in 1635, Champlain devoted his energies to the success of the colony. Quebec soon became the center of the fur trade which was the foundation of prosperity in New France, as the colony was called. Champlain made trips to the interior and formed an alliance with the Huron and Algonquin Indians. He aided them in a war against the Iroquois and thereby turned the Iroquois against the French, until Canada passed under British control. Montreal was founded in 1643.

Fransciscan and Jesuit missionaries followed Champlain and established missions among the Indians far in the interior. For a time the Jesuits exerted a strong influence over the civil affairs of the colony, often quarreling with the governors. Between these quarrels and the attacks by the Iroquois the colony led a precarious existence during its first half century.

In 1672, Frontenac was appointed governor and for ten years he ruled Canada with a firm hand. He regulated the fur trade, checked the Iroquois and established military posts at Frontenac, Niagara, Mackinac and at Fort Saint Louis (Starved Rock) Illinois. Joliet and Marquette, and LaSalle explored the Mississippi River and laid claim to its great valley in the name of France. See CARTIER, JACQUES; CHAMPLAIN, SAMUEL; FRONTENAC; JOLIET; MARQUETTE; LASALLE.

Difficulties with the English began in 1629, and continued for more than a century. During this period the French strove to establish themselves firmly in New France, and the English strove to dispossess them. Wars between France and England at home extended to the colonies and are recorded in American History as French and Indian wars. The last, culminating in the Battle of Quebec in 1759. In the Treaty of Paris, 1763, the French ceded to Great Britain all her territory in North America except the district and city of New Orleans. The French settlers were allowed to retain their lang-

uage, religion and laws, and they became loyal British subjects. There were at this time about 60,000 French and 500 English in the colony.

The influx of English settlers began when the English colonies in America declared their independence. Many inhabitants of these colonies, unwilling to sever their allegiance to the mother country, emigrated to Canada, settling in Nova Scotia, New Brunswick and the southern part of what is now Ontario. These immigrants laid the foundation of the English settlements in Canada, and from that time to the present they and their descendants have exercised a powerful influence in the affairs of the country. In 1791 the colony was divided into Upper Canada and Lower Canada, the latter containing nearly all the French speaking people. The colonies remained separate for fifty years, when they were reunited, but the change did not satisfy the inhabitants of either province, who desired a more responsible government than was provided in the act forming the union. In 1837 dissatisfaction led to a rebellion in which a small number of inhabitants joined. The uprising was quickly suppressed, but it called the attention of the British government to a condition that must be remedied, and the reunion of the provinces was the result. This union continued with more or less friction between the provinces until 1867.

By the British North America Act of the British Parliament in 1867, New Brunswick, Nova Scotia, Quebec and Ontario were united to form the Dominion of Canada. (See GOVERNMENT, above). Newfoundland refused to join the federation. In 1869 the Dominion purchased the vast territory belonging to the Hudson's Bay Company. In 1871 British Columbia agreed to join the Dominion, provided a transcontinental railway should be completed within ten years, and the Canadian Pacific Railway was built to comply with this condition. In 1873, Prince Edward Island came in, and the Dominion included all of North America north of the United States, except Newfoundland and Alaska.

The province of Manitoba was created in 1870. The same year there was an uprising of half-breeds or Metis and Indians in the province under Louis Riel, who led the Indians to believe that they were to be deprived of their lands. The uprising was quickly suppressed and Riel fled to the United States. In 1905 the provinces of Alberta and Saskatchewan were created and in 1912, the District of Keewatin was divided between Manitoba and Ontario and Ungava was added to Quebec. See BORDEN, ROBERT L.; LAURIER, WILFRED; MACDONALD, JOHN A.

CANADA AND THE WAR. The Dominion gave undivided support to the empire in the Great War. With a population of less than 8,000,000 she raised an army of 450,000, of whom 390,000 were sent to the front. In whatever position they were placed, the Canadian troops made good. In the second battle of Ypres, April, 1915, the Canadian troops, though greatly outnumbered, held their ground and thereby saved the allies from disaster. It is estimated that over 13,000 aviators, among the best in the service, were Canadians. Thousands of tons of ammunition were manufactured and 450 miles of rails were torn from the railroads and sent to France. The number of killed, wounded and missing was 165,000 men. Of these 45,000 were killed or believed to be dead; of the wounded nearly 45,000 recovered. A most noteworthy record was made by the Dominion in helping its returned soldiers to find positions in the activities of civil life.

Sir Julian Byng, Baron of Vimy and Thorpe, was appointed Governor-General of Canada in May, 1921. General Byng is celebrated for his victory over the Germans in the drive against Cambrai, which began November 20, 1917. It was under his command in 1916, that the Canadian troops distinguished themselves in the battle of the Somme and the Capture of Vimy Ridge.

STATISTICS. The Canadian census is taken every ten years. The last census was taken in 1921, 8,769,489. The following data is from the last census available, and gives an excellent idea of the condition of the country at that time. Some industries were seriously affected by the War.

Peas, bushels	7,282,496
Mixed grains, bushels	19,649,329
Beans, bushels	1,284,236
Corn, bushels	23,592,811
Potatoes, bushels	68,796,893
Turnips, bushels	104,438,831
Hay and clover, tons	12,824,000
Fodder corn, tons	3,279,360
Dairy products	$35,000,000
Butter, pounds	41,000,000
Tobacco, acres	6,000
Wool clip, pounds	11,000,000
Domestic Animals—	
Horses	1,800,000
Cattle	6,000,000
Sheep	2,700,000
Swine	3,000,000
Fisheries, value	$25,000,000
Grapes, acres	12,785
Exports	$297,196,360
Miles of railway	23,267
Mineral Production	$87,000,000
Asbestos, tons	65,534
Portland cement, barrels	2,665,289
Coal, tons	10,904,466
Copper, pounds	64,361,636
Corundum, tons	1,039
Gold, value	$9,559,274
Gypsum, tons	340,964
Lead, pounds	45,725,886
Mica, value	$191,602
Natural gas, value	$1,012,060
Nickel, pounds	19,143,111
Petroleum, barrels	527,987
Pig iron (from Canadian ore), tons	99,420
Pyrites, tons	47,336
Salt, tons	79,975
Silver, value	$11,667,197
Sewer pipes, value	$514,042
Bank deposits	$654,000,000
Teachers in public schools	31,598
Pupils enrolled	1,146,321
No. of postoffices	11,377
No. of immigrants (1910)	311,084

Canadian Literature. See LITERATURE.

Canadian National Park, a pleasure ground of the Canadian Northwest. It lies in the heart of the Rocky Mountains, on the border line between Alberta and British Columbia. It is one of the great parks of the world. The area is 5,732 square miles —3,668,480 acres. The present park was formed by the union of two parks, the Yoho and the Rocky Mountain Park. The Canadian Pacific traverses the park from east to west. Banff may be regarded as the railroad and hotel center. As the park is 70 miles in width and 100 miles in length, no one pretends to be familiar with all the gorges, glaciers, caverns, lakes, hot springs, and waterfalls. The park is full of game, but guns are forbidden. Bears, moose, elk, antelope, red deer, mountain sheep, goats, wolves, even coyotes, and many fur bearing animals abound. The rivers and lakes are full of the grayling, the mountain trout, the rainbow trout, and the salmon trout. Animals from every direction, seeming to know that they are safe within the park, resort thither for protection. A herd of buffalo, the largest on the continent, is domesticated in one of the valleys. There is probably no other place where good hotels are so near to wilderness.

Canadian Thistle, a well known and troublesome weed. It is an emigrant from Europe, where it is known as the field thistle. It is the most slender of all our thistles; the flowers are rose-purple; the heads are small and numerous. The root-stocks creep and interlace, and form extensive mats that defy the plow. The Canada thistle is a plague in old fields, pastures, and waysides. Nothing else can grow where a patch has taken possession, and it is the most difficult of all weeds to eradicate. Quack grass has more vitality and is harder to kill, but it lacks the sharp, prickly leaves. Quack grass affords valuable pasturage, but the thistle is an unmitigated nuisance, not to say, a torment, for stock avoid it like a plague.

There seem to be three common sense ways of exterminating the pest,—cultivating, smothering, and salting. The stalks may be mowed, raked, and dried to clear the way for the team. The thistle sod may then be turned over. If disked early and late and between times through a dry season, literally chopped to pieces and so frequently that no green blade peeps up, the thistles can be killed out. The chances are, however, that a rainy spell or a little neglect during a busy time, as haying or harvest, will enable the thistle to reset worse than ever. The whole secret lies in the principle that no ordinary plant, weed, or grain can live many seasons if prevented from forming leaves and thereby its growth is soon checked.

The second method is dependent on a similar principle. No ordinary plant can live if kept in the dark. If a straw stack

or manure pile be left on a thistle patch for a sufficient length of time, the thistle will rot in the ground. A covering of tarred paper, weighted down so that the cracks will not blow open, will answer the purpose. Smothering is a practical plan for small patches.

The third method is dependent on the principle that ordinary plants cannot live in alkaline soil. If enough salt or ashes be spread on the thistle mats to soak the soil with brine or lye the thistle will die, and that right speedily. Subsequent rains will leach the salt or lye out of the soil and distribute it so widely that the field will be none the worse, but rather the better for farming.

Canal, an artificial waterway. Mill races, sluiceways, and irrigation canals are also designed to convey water. As generally used, however, the term canal is applied to waterways permitting the passage of boats and ships. Canals are of great antiquity. The Grand Canal of China is more than 800 miles long. In the prosperous days of Babylonia, Mesopotamia was intersected by waterways. Lower Egypt was well provided with canals. The Romans constructed canals from the lower Rhone to the Mediterranean, and from the Tiber to the sea. The plains of Lombardy were connected with the Adriatic Sea. A canal from the Bay of Biscay to the Mediterranean was completed in 1681. It is 148 miles long. It saves a far-about voyage of 2,000 miles through the Straits of Gibraltar. Holland, Belgium, portions of France, England and northern Germany are covered by networks of artificial waterways. A system of canals connects St. Petersburg with the Caspian Sea. A canal 108 miles long, by way of the Main, connects the Danube and the Rhine.

The first boat canal in the United States was built in 1793 around the Falls of the Connecticut River at South Hadley. There are now about forty inland canals in the United States with an aggregate length of over 2,470 miles. They have cost $200,000,000. They lie chiefly in New York, Virginia, and intermediate territory. One of importance, 196 miles in length, runs from Chicago to La Salle at the head of navigation on the Illinois River. The Ohio Falls Canal is constructed around the rapids of the Ohio River at Louisville. It is only 11,000 feet long, but is of great importance to navigation. The most celebrated canal in the United States is the Erie, connecting Buffalo on Lake Erie with the Hudson River at Albany, a distance of 352 miles. It was opened in 1825. Its first cost was $7,602,000. The cost of freighting was reduced, however, from $100 a ton to $3.

Canada has built three important canals for the improvement of the St. Lawrence and Great Lakes waterway. The Sault Ste. Marie Canal permits passage through the rapids between Lakes Superior and Huron; the Welland Canal enables ships to pass the Falls of Niagara; a third passes around the Lachine Rapids in the St. Lawrence River.

Of ship canals the Suez Canal is the most celebrated. It unites the waters of the Mediterranean with the Red Sea. The Caledonian Canal connects the Firth of Forth and Loch Eil. The Manchester Canal connects that city with Liverpool. The Kaiser Wilhelm Canal connects the North Sea with the Baltic.

While digging a ditch through the ground seems very simple, the construction of a canal is really an engineering work of great difficulty. It requires to be carried over waterways on aqueducts. The Erie Canal crosses the Mohawk River on arches twice. The Suez Canal is level from end to end. In case, however, that a canal of this sort would require too deep a ditch in the middle of its course, it must be constructed in sections at different levels, connected by locks. In its simplest form a lock is a water-tight passageway, or a basin fitted with doors at the upper and lower ends. When a boat desires to descend into a lower part of the canal, it enters the basin and the upper doors are closed behind it. The water is then allowed to run out of the basin until the boat has dropped to the level of the section below. The lower doors are then opened and the boat passes on its way. In case it is desired to raise the boat to a higher level, it enters the basin

from below, the doors are closed behind it, and water is admitted from above until the basin fills, raising the boat to the level of the upper section. The upper doors are then opened and the boat proceeds on its way. Sometimes a number of locks are built at the same place. In this way a boat is enabled to climb a hill—one step at a time.

Sometimes canal boats are pulled up an inclined plane by steam power. What are known as tank elevators are used in the canals between Belgium and Paris. Peterborough, Canada, has one of the largest canal locks of this sort in the world. It consists of two water-tight steel boxes, each holding 1,300 tons of water. These ascend and descend by hydraulic power, between three great guide towers, 100 feet high, built of solid masonry. When one box is up, the other is always down. A boat enters a box; the gates close; a little addi-

American Canals.

Showing the cost, date of construction, length, and navigable depth of the principal commercial canals of the United States and Canada.

Name.	Cost of construction	When completed	Length miles	Depth feet
Albemarle and Chesapeake (Va. and N. C.)	$1,641,363	1860	41	7½
Augusta (Ga.)	1,500,000	1847	9	11
Black River (N. Y.)	3,581,954	1849	35	4
Cayuga and Seneca (N. Y.)	2,232,632	1832	25	7
Champlain (N. Y.)	4,044,000	1822	81	6
Chesapeake and Delaware (Md. and Del.)	3,730,230	1829	14	9
Chesapeake and Ohio (Md. and D. C.)	11,230,327	1850	181	6
Companys (La.)	90,000	1847	22	6
Delaware and Raritan (N. J.)	4,888,749	1818	66	7
Delaware Division (Pa.)	2,433,350	1830	60	6
Des Moines Rapids (Iowa)	4,582,009	1877	7½	5
Dismal Swamps (Va. and N. C.)	2,800,000	1822	22	6
Erie (N. Y.)	52,540,800	1826	387	7
Galveston and Brazos (Tex.)	340,000	1851	38	3½
Hocking (Ohio)	975,481	1843	42	4
Illinois and Michigan (Ill.)	7,357,787	1848	102	6
Illinois and Mississippi (Ill.)	7,350,000	1895	75	7
Lehigh Coal and Navigation Co. (Pa.)	4,455,000	1821	108	6
Louisville and Portland (Ky.)	5,578,631	1872	2½	..
Miami and Erie (Ohio)	8,062,680	1835	274	5½
Morris (Pa. and N. J.)	6,000,000	1836	103	5
Mussel Shoals and Elk R. Shoals (Tenn.)	3,156,919	1889	16	6
Ogeechee (Ga.)	407,810	1840	3	3
Ohio (Ohio)	4,695,201	1835	317	4
Oswego (N. Y.)	5,239,526	1828	38	7
Pennsylvania (Pa.)	7,731,750	1839	193	6
Portage Lake and Lake Superior (Mich.)	529,892	1873	25	15
Santa Fe (Fla.)	70,000	1880	10	5
Sault Ste. Marie (ship canal)	4,000,000	1895	3	18
Schuylkill Navigation Co. (Pa.)	12,461,600	1826	108	6¼
Sturgeon Bay and Lake Michigan (Wis.)	99,661	1881	1¼	15
St. Mary's Falls (Mich.)	14,087,631	1918	1½	24¼
Susquehanna and Tidewater (Pa. and Md.)	4,931,345	1840	45	5½
Walhonding (Ohio)	607,269	1843	25	4
Welland (ship canal) (Ont.)	23,736,353	1900	26¾	14

Foreign Canals.

Name.	Length miles	Depth feet	Bottom width feet	Cost
Suez, Mediterranean and Red Seas	90	31	108	$100,000,000
Cronstadt, St. Petersburg	16	20½	220	10,000,000
Corinth, Corinth and Ægina Gulfs	4	26¼	72	10,000,000
Manchester Ship, Manchester and Liverpool	35½	26	120	75,000,000
Kaiser Wilhelm, Baltic and North Seas	61	29½	72	40,000,000
Elbe and Trove	41	10	72	6,000,000
Amsterdam	13½	23	88	.....
Panama canal (1915)	50	45	300	325,000,000

tional water is introduced into the other box, and the boat rises swiftly and steadily to the higher level. The operation is almost automatic, three minutes being required to make the lift. The entire lockage is accomplished in twelve minutes. This lock was completed in 1903 at a cost of $500,000.

The Erie Canal has seventy-two locks. Fifty-seven of them are double. Boats are lifted at West Troy 188½ feet, and at Lockport 54½ feet. The total difference in the level of the highest and the lowest section of the canal is 568 feet. The locks of the Morris Canal in New Jersey lift boats 1,084 feet. Canals require to be wide enough so that boats going in opposite directions may pass each other. In ship canals the ship is usually towed by a tug. By far the greatest achievement in canal construction is the Panama Canal. This is treated fully in another article. Among the recent canal projects are the New York Barge Canal, the Cape Cod Canal, and the New Welland Canal. Among related projects of interest are the Keokuk dam and lock and the high dam at Minneapolis.

See ERIE CANAL; SUEZ CANAL; PANAMA CANAL; CORINTH; SAULT STE. MARIE; PARIS; LOCK; NOVA SCOTIA.

Canard, kà-närd′, the French name for duck. In conversation it is applied to any improbable story, much in the same way as we apply the term fishy, or fish story. A story was once current in Paris to the effect that a flock of starving ducks ate one of their number every day until but one duck remained. It has been suggested that the term, canard, grew out of this improbable anecdote.

Canary, a beautiful little finch, intermediate between the goldfinch and the linnet. It is found wild in Madeira, the Canary, and Cape Verde Islands, where it comes around houses, building nests of moss and feathers. It is a celebrated songster. Its plumage is green, or greenish-yellow in its native home, but, like other domesticated animals, it has developed into a number of varieties. Eggs, pale blue, four or five in number. The female sits thirteen days. Several broods are raised every year. The wild bird is about five inches long. The canary industry is an important one, particularly in the Harz Mountains, where unusually fine birds noted for extraordinary powers of song fetch as high as seventy-five dollars apiece. Hemp seed, canary seed, which is the seed of a grass abundant in the Canaries, millet, poppy seed, bits of green lettuce, and sugar form the best diet for this favorite cage bird. Lime is supplied by a cuttlefish bone. Healthy birds live about fifteen years. See BIRD; GOLDFINCH.

Canary Islands, a cluster of thirteen volcanic islands lying 150 miles off the western coast of Africa. They form a province of Spain. The inhabitants are chiefly of Spanish blood. Population in 1916 was 497,998; area, about 2,808 square miles. The peak of Teneriffe rises to a height of 12,182 feet. It is a welcome landmark to the sailor. The plants are in part those of the Mediterranean region, including the oak, chestnut, pine, cedar, etc., with a few, as the Euphorbia, from Africa. There are 420 species of flowering plants not found elsewhere. The canary bird, the red partridge, and several kinds of lizards abound, but there are no snakes. As in Italy and southern France, the goat is an important domestic animal; but there are several thousand cattle in the islands. Where not too stony the soil is productive, meriting the old name of "Fortunate Islands." A number of fine hotels, together with the attractiveness of the climate, have made the Canaries a favorite winter resort. The exports are chiefly bananas, tomatoes, potatoes, onions, cochineal, sugar, wine, and almonds. Orchards of oranges, lemons, and figs yield abundantly. The women folk are noted for linen drawn-work. See SPAIN.

Cancer, a malignant disease somewhat resembling a carbuncle in appearance. The name is Latin, meaning crab's claw, from the fact that the roots of a cancer, extending in different directions, have somewhat the appearance of a crab's claw. Several kinds of cancer are characterized as hard, soft, black, etc. It is a malady that baffles the skill of the physician. The

only sure cure is removal by the surgeon's knife before the roots have penetrated the tissues too far to be reached, for no part of the body, bone or muscle, is proof. Caustic is not infrequently employed to burn out a cancer. Of late hope has been aroused that all but the most grievous cancers may be killed by the use of X-rays and certain light rays of an ultra nature. Cancer kills about 30,000 Americans a year. In the whole United States, it ranks seventh in the number of its victims. See FINSEN.

Candle, a cylindrical piece of wax, paraffin, or tallow, with a wick running lengthwise through its center. It is designed to give light in burning. In burning the flame melts the fat; the wick absorbs the melted fat and feeds it into the flame. The wick and the fat require to be well proportioned to give the best results. If the wick be too small the light will be dim and the flame too small to melt the fat fast enough. If the wick be too large for the candle the supply of fat will be insufficient to maintain a bright flame. The wick is usually of soft, twisted cotton string. In early England rushes were used for the wicks of rush lights. Scientists have tried, without marked commercial success, to invent a wick that would not need snuffing.

Tallow makes excellent candles. The wax known as spermaceti is from the sperm whale, and is the best material. Excellent wax for candles is made from palm oil. Paraffin is used most commonly in England. Dip candles are made by lowering the wicks into melted tallow or wax repeatedly, allowing each coating to cool and harden before dipping again. Molded candles are made by pouring melted tallow into cylindrical molds of pewter or tin through the center of which wicks have been drawn. The lower end of the mold is closed by a conical cap, in the center of which a hole is left for the wick. The wick is passed through this hole and knotted. The other end is held in place by fastening it to a cross stick. The heated tallow is poured into the mold surrounding the wick and is allowed to harden. The knot is cut at the lower end of the mold, the mold is warmed slightly, and the candle withdrawn. The candle is made up end down, with the top or conical end in the lower end of the mold. Usually a number of candles are molded at the same time. Wax is too sticky and contracts too much in cooling to be run in molds. The wax candles are made by dipping and then rolling to and fro on a flat table to give a smooth, even surface. Large wax candles, such as are burned on altars, are made usually by wrapping a sheet of wax around a wick and then rolling.

In burning, the melted fat is converted first into a gas, which forms a dark, cool spot around the wick. The light produced by a sperm candle seven-eighths of an inch in diameter, and burning 120 grains an hour, is taken as a measure of light giving. It is called a standard candle. A ten-candle electric lamp is one that gives as much light as ten of these candles.

The Chemistry of a Candle by Tyndall is an interesting book.

Candy. See CONFECTIONERY.

Canebrake, a thicket of cane. Bundles of the American cane are shipped over the country as "bamboo" fishing poles. Cane grows in almost impenetrable thickets in the bottom lands of Kentucky and southward. Many authorities call cane a bamboo. At all events it is closely related to the larger plant so much used by the natives of southeast Asia. Cane grows from ten to forty feet high with a thickness at the butt of one-half to three inches. Cane is, of course, only a large reed. It belongs, with sugar-cane and broom corn, to the grass family. See BAMBOO.

Cannibal, a person who eats human flesh. The word is a corruption of the word caribal, from Carib, a native of the Caribbean region. Allusions to cannibals occur in the most ancient writings. Many savage people consider human sacrifices or feasts of human flesh the most acceptable offering to their gods. The ancient Aztecs and the people of Borneo and of the Fiji Islands indulged in frightful orgies of this kind. The North American Indian believed that devouring the heart

of a brave enemy gave him courage in battle. Downright eating of human flesh for ordinary food is not believed to have been widespread at any time, yet the natives of Malaysia, New Guinea, the South Sea Islands, and parts of western and central Africa were certainly addicted to this habit. A traveler among the Indians of Tierra del Fuego states that in times of scarcity they ate their own people, even in preference to their dogs, the latter being useful in taking game. It is believed that cannibalism is not practiced at the present time, except in very limited, out-of-the-way regions.

Canning, a process of preserving perishable articles of food by excluding agents of decay. The article to be preserved is first heated to sterilize or kill bacterial germs, and is sealed up in sterilized, air-tight glass or metal jars to keep bacteria out. If bacteria within be killed and bacteria without be kept out,—that is, if sterilization and sealing are successful, canned goods keep fresh indefinitely. The process was invented, or rather discovered, in France about the beginning of the nineteenth century, so that no tests of ancient canning are possible; but canned goods sealed up over eighty years ago are still palatable.

Housewives not infrequently seal earthen jars with sheets of writing paper, rendered airtight by a sizing of the white of an egg; but glass jars with metal covers are more convenient and are safer. The jars are usually surrounded by boiling water and filled with boiling hot fruit, the covers are screwed on tight, and the process is complete. If all be done with care and neatness, the jars may be set away for years and not ferment.

The process in large canning establishments is essentially the same. Tin cans are set in hot water, and are filled with boiling hot fruit, vegetables, or fish. The orifice is covered with a piece of tin, which is sealed in place with a soldering iron. An awl hole is left open; the contents of the can are brought to a boil. The hole is then sealed with a drop of solder. If bacteria are excluded successfully, the goods cannot spoil.

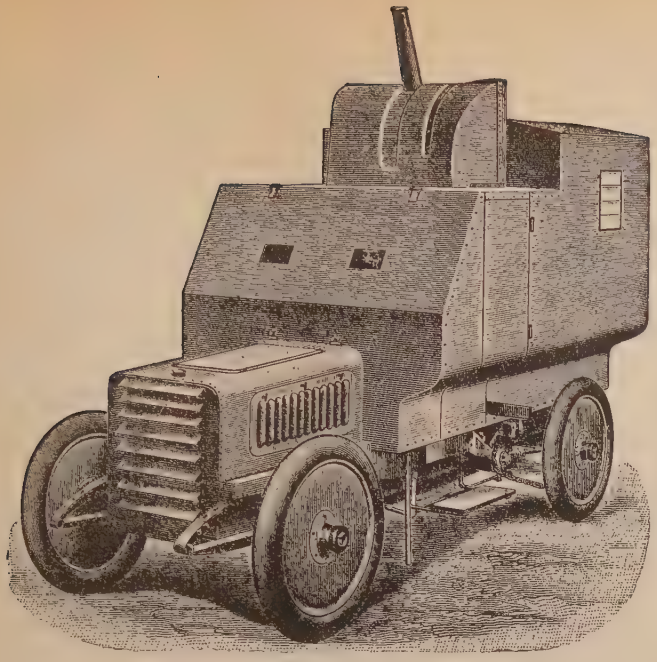
The canning industry in America appears to have begun in New York City about 1818 with lobster and salmon; but it has been extended to include all kinds of meats, fowl and fish, vegetables, soups, milk, fruits, not to name a large number of pickles and relishes. Canned goods grew in favor slowly until about 1850, when the rush to the gold fields of California, followed by the Civil War and the opening of the Great Plains and Rocky Mountain regions, created a tremendous demand for all sorts of canned food.

"Thirty years ago," says the *California Fruit Grower,* "canned goods were a luxury, relatively expensive, and used only in emergencies, on shipboard, or at remote places where other food was unobtainable. Today their use is universal among the poor as well as the rich. It would be difficult to find a home, hospital, club, hotel, steamer, or buffet car without its assortment of them."

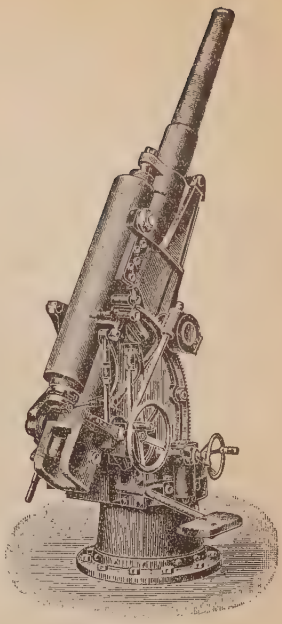
The last United States census gives the value of pickles, fruit, and vegetables put up in cans at $157,101,000. The annual number of cans, almost incredible until the reader pauses to recall how omnipresent canned goods are in every grocery, is given by the same authority as: peas, two-pound cans, 141,640,872; corn, two-pound cans, 178,830,360; tomatoes, three-pound cans, 309,839,664; and other vegetables, as string beans, pumpkins, beets, squash, asparagus, etc., in great quantities.

Canning is carried on in every province, state and territory of North America, but shows a tendency to centralize. California leads easily in fruit. The state put up canned fruit worth $32,915,000. Maryland cans a good fourth of the tomatoes and peas. New York still leads in corn.

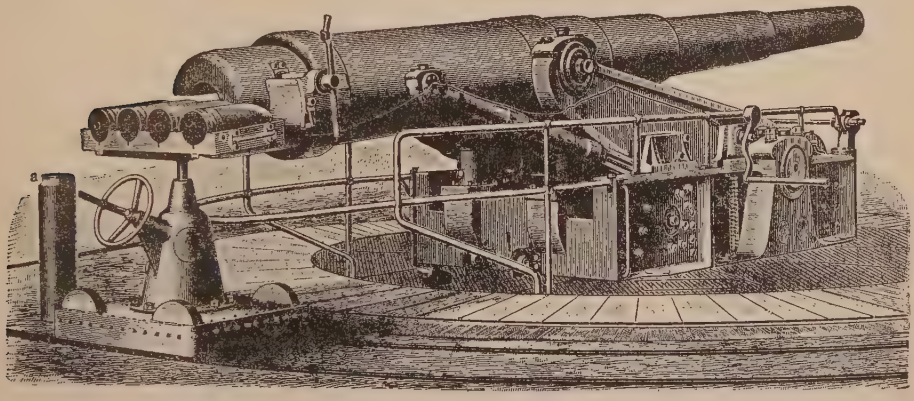
Cannon, large guns for hurling projectiles by means of explosives. Cannon were used by Edward III against the Scots in 1327; by the French against the Flemish in 1338; and by the English at the battle of Crecy and at the siege of Calais in 1346. The first cannon were built like a keg, of iron bars surrounded by hoops and iron rings. The first cannon balls were made of stone. The largest American cannon in 1918 threw a projec-



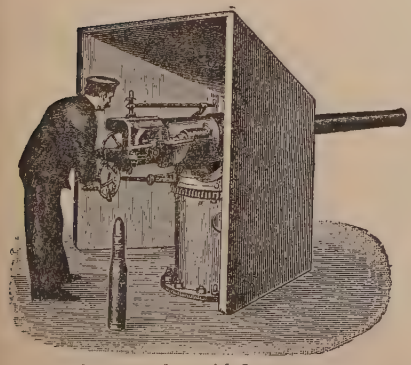
Armored automobile with rapid-fire gun.



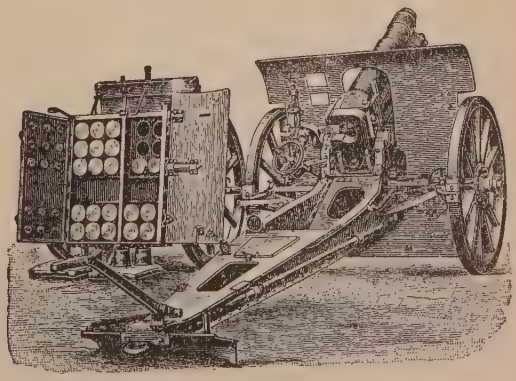
Balloon gun.



Krupp disappearing gun.



Protected rapid-fire gun.



Field gun and ammunition wagon in position.

tile less than 20 miles. In March, 1918, a German Big Bertha with a range of 75 miles sent shells into Paris weighing 330 pounds, traveling twelve miles above the earth with a speed twice as great as sound. By November the French had a bigger gun to bombard Metz. It weighed 200 tons. A single 3,200-pound shell paralyzed and deafened a whole garrison at Malmaison. The gun is a 52 cm., the largest in existence.

Cannon, Joseph G. (1836-), an American statesman. He was born of Quaker parentage, at Guilford, North Carolina. The family removed to Illinois, where the young man worked in a grocery store and studied law until admitted to the bar. He was state's attorney of Vermilion County, 1861-68, and in 1873 was elected to Congress by the Republican party, and served continuously till 1891 when he went down to defeat in the general Cleveland landslide. In 1893 he was again returned to Congress and has been re-elected at each recurring campaign since that time. From 1903 to 1911 he served as speaker of the House, ruling that body with an iron hand. He gradually lost his following among the representatives as the so-called insurgent movement among the Republicans gained ground. He was unswervingly allied with the "stand-pat" element in the party, which cost him the confidence of the country at large. Just at the close of the session in the spring of 1911, his opponents had gained sufficient strength to appeal successfully from his decision in one of the most dramatic incidents ever witnessed in the House. In the next Congress he was succeeded in the speakership by Champ Clark, a Democrat. He retired in 1922.

Canon Law, a term applied to the rules or canons laid down by a church or a religious order for the guidance of its followers. The most important example is the code of the Roman Catholic Church. It had its origin in Scriptural teachings and has been determined by the pope or by councils of the Church under his direction, some twenty in number, beginning with the Council of Nicaea in 325. With its many additions and revisions it has become an extensive code.

Canoe. See BOAT.

Canossa, a mountain castle of the Apennine region, one-third of the way from Bologna to Genoa. It is about twelve miles southwest of the railroad station of Reggio. In 1077 it was the temporary residence of Pope Gregory VII. He required Emperor Henry IV of Germany with whom he had a serious quarrel to come to Canossa for absolution. Henry, it is said, made supplication at the gate for three days, bareheaded and barefooted, before the pope consented even to see him. To go to Canossa is, therefore, a proverbial expression for abject surrender, humiliation.

See GREGORY VII.

Canova (1757-1822), a celebrated Venetian sculptor. He is one of the most noted artists of modern times. His favorite material was Carrara marble. His subjects were both classical and modern. A list of fifty titles would be required to do justice to his work. Some of the classical subjects selected for his mallet and chisel were Theseus, Cupid, Psyche, Hercules, Venus, Hector, Ajax, and Apollo. He executed several effigies, or tombs, of wondrous white marble, having great skill in making cold marble lie in soft, fleecy folds, as the drapery of a recumbent figure. A statue of the king of Naples, a bust of Napoleon, and a colossal statue of our own Washington in a sitting attitude are some of his more modern achievements. In 1816 Canova induced the French to restore the art treasures of Rome, which had been carried off by Napoleon. His name was enrolled by the pope in the Golden Book as one who "deserved well of the city of Rome."

Canovas del Castillo, Antonio (1828-1897), a Spanish statesman and man of letters. He was born and grew up at Malaga. At an early age he entered the field of journalism and allied himself with the Liberal Party by whom he was elected to the Cortes in 1854. His rise into prominence was rapid, and he became a leader in the movement which placed Alfonso XII on the throne. He was several times prime minister; and was again serving in that capacity, when he was killed by an anarchist.

Cantabri, the rudest and perhaps the most valiant of the inhabitants of ancient Spain. These bold mountaineers dwelt in what was then known as Cantabria, the northwest part of the Iberian penninsula near the Bay of Biscay. The general name Cantabrian Mountains is still used for the various ranges extending along the north of Spain west of the Pyrenees. They are known chiefly for their brave opposition to the Roman arms in the Cantabrian War of 25-19 B. C. The Emperor Augustus in his efforts to extend the Roman arms to the limits of Europe on the west, sent Tiberius across the Pyrenees into Spain. In various campaigns extending over six years this was accomplished, but with heavy losses. The Cantabri who retired to their mountain fastnesses were never fully subjugated.

Cantaloupe, a variety of muskmelon, known also as rockmelon. The melon is from Asia; the name is from Italy. The melon was brought from Armenia, it is believed, to the papal gardens at Cantaluppi, near Rome. As distinguished from the nutmeg varieties, a cantaloupe is any furrowed muskmelon having a hard, warty rind. The flesh may be white, green, or yellow.

A small, hard, rough cantaloupe, with green, fibrous flesh of rich, sweet flavor, has been developed by the growers of Rocky Ford, the county seat of Otero County, in southeastern Colorado. Gardeners call this variety the Netted Gem, but it is known the United States over as the Rocky Ford cantaloupe. The Colorado melon district is a belt of rich, irrigated land in the valley of the Arkansas. The business began in the eighties with small shipments to the Denver market. The peculiar adaptation of the soil to the raising of the melon and its acceptability in the market have encouraged growers, until the cantaloupe crop is the chief dependence of a large section of which Rocky Ford is the chief station.

Cantaloupe raising has had quite a history. It is easy enough to raise cantaloupes. With rich soil, sunny skies, and irrigation, one summer is like another; the grower is independent of season. The loss or profit lies in the manner of marketing. At first, shipments were made by individual growers by express. The rates ate up the profits. Too many melons were dumped on the market at a time. Owing to rumors of high prices, one city might have an over supply, while another had none. The growers learned to coöperate in 1896. A group of farmers arranged to combine their melons and ship by freight in car lots to Kansas City and St. Louis. The first cars sold to advantage. Later shipments were sold at a loss.

The next season an association of practically all the growers in Otero County was organized. One hundred and twenty cars were sent to the St. Louis market. This year established the fame of Rocky Ford and brought the grower profit. In 1898 disaster came. Large plantings were made. Eight hundred growers associated. Arrangements were made to ship under contract to a single St. Louis firm which had established agencies in New York, Pittsburg, and other Eastern cities. Five thousand acres of melons were ready for daily picking. Rocky Ford was a busy station. As high as twenty-eight cars were sent off daily. The markets were glutted. Melons spoiled in transit. A hundred cars were thrown into New York harbor. The Santa Fé railroad cancelled freight charges on spoiled car lots, but the commission house was able to pay the growers' association less than a third of the contract price.

It is difficult to get farmers to hold together even under favorable circumstances. The disaster wrecked the large association, and many growers turned their attention to sugar beets. The notion of coöperation survived, however. Many smaller associations were formed with a central steering committee. Standard Rocky Fords are now shipped in crates holding forty-five melons. The "ventilator" car of early shipments has been replaced by large refrigerator cars in which some 366 crates can be sent to any corner of the Union. Melons arrive in as firm and sound condition as when they started. The distribution was controlled (1909) almost entirely by four commission houses in Pittsburg and New York. The year named was a year of over production.

Imperial Valley, California, has become one of the leading cantaloupe-producing regions of the country.

Cantata, kän-tä'tà, originally a musical composition for one voice including both melody and recitative. The term has come to be applied to a class of musical compositions comparable with oratorios and operas, but shorter and less pretentious than either. The cantata is arranged for several, sometimes for many voices. It includes solos, choruses and interludes. The oratorio is dignified, its theme is sacred, moreover it is purely musical. The cantata may have a sacred theme or it may be light in character. If the theme be sacred it is of a simple nature, less symbolic than that of the oratorio. The cantata may combine music and drama. It then resembles the opera, but is presented, usually, without scenic accessories. See ORATORIO; OPERA.

Canteen, Army. Literally a canteen is a soldier's drinking cup. The name is applied commonly to a shop in garrisons and barracks where a soldier may purchase refreshments of various sorts. In the American army the canteen or post-exchange for many years derived its profits from the sale of beer and light wines. In 1901 Congress passed a law prohibiting the sale of intoxicating liquors in any canteen, post-exchange or army transport. The canteens were soon closed, presumably because there was no profit in running them without liquor. Soldiers were thus deprived of the opportunity of purchasing small comforts or meeting each other socially without going outside the camp. Therefore, in 1902 and 1903, Congress voted $500,000 to support canteens. In the World War canteens were maintained by social organizations.

Canterbury, a cathedral city of east Kent. It was the capital of the ancient kingdom of Kent. It lies fifty-six miles from London on the highroad from that city to Dover. It was the original seat of Christianity in Great Britain. It is situated in a fertile valley among green hills, and presents a picturesque appearance from whichever side it is viewed. There is a considerable local industry in brewing. The present population is about 25,000. There are local manufactures of beer, leather, brick, lime, and ropes, as well as a local trade in grain and hops. The chief feature of the town, however, is a magnificent Gothic cathedral. The original buildings have all been destroyed. The present edifice has been built at several different times. It is not uniform in style, but is very impressive. It is 530 feet in length and 154 feet in breadth. The main tower, 235 feet in height, is one of the finest in England. The material is a yellow stone from Caen, France. The Archbishop of Canterbury is the primate of the Church of England. He places the crowns on the heads of the king and queen at their coronation, and, wherever they may be, he regards them as his parishioners. Canterbury formerly contained the shrine of Thomas à Becket, to which pilgrimages were customary in the days of Chaucer. Although Becket's shrine was demolished in 1538 by Henry VIII, a number of interesting monuments are still to be seen. See LAMBETH PALACE; CHAUCER; BECKET; ANGLO-SAXON.

Canterbury Tales, The, a collection of stories by Chaucer, first printed in 1475. The work consists of twenty-two poems and two prose tales, told by a company of pilgrims on their way to Canterbury. See CHAUCER.

Canton, a large city in China. The population of the city with its suburbs is estimated at 1,600,000. It is inclosed by brick walls twenty-five feet high and twenty feet thick, having a circuit of over six miles. There are a dozen gates. All close at night-fall, oriental fashion. The streets are straight, clean, and narrow. Goods are carried on bamboo frames, a man walking at each end. Common people walk; the aristocracy are carried in sedan chairs. There are many imposing temples, among others two lofty pagodas. The prevailing religion is Buddhism. The city is situated on the Pearl River about eighty miles from the sea. Wharves extend for several miles. A very great number of houseboats, as many as 20,000 or 30,000, crowd the river. It is thought that 200,000 people have no other home. Families live for generations in these

floating dwellings. They catch a few fish, but make their living chiefly by conveying merchandise. Canton merchants are shrewd business men, noted for their honesty. The foreign business, chiefly with the United States and Great Britain, amounts to about $40,000,000 a year. European ships began to visit Canton by way of the Cape of Good Hope in 1517. See CHINA.

Canton, a city of Ohio, county seat of Stark County. It is in the midst of a rich agricultural region, and deposits of coal, limestone, and pottery clay are near by, but the city's chief interests are in the line of manufactures. Among manufactured products are watches and watch cases, dental chairs, stoves, farming implements, metal ceilings, metal office furnishings, machinery, and iron bridges. There are also rolling mills and steel works. The city has paved streets, electric lights and street railways, is served by several railroads and has two parks and a beautiful lake resort. There are schools, churches, newspapers, banks, hospitals,—all the requisites for a flourishing modern city. In 1907 a national monument was erected here in honor of President McKinley, whose home for many years was at Canton. According to the census of 1910 the population of Canton is 50,217.

Canton Flannel, a stout, twilled cotton cloth woven of soft twisted yarns, with a more or less dense nap on one side. If napped on both sides, the fabric is called double-faced. The name canton flannel is from Canton, China, from which place this fabric was first imported into England. Canton flannel is put on the market, bleached, unbleached, and dyed in plain colors. It is used as a substitute for wool flannel; also for linings, bandages, and working gloves and mittens. It is sometimes called cotton flannel.

Canute. See KNUTE.

Canvas, a dense, heavy, plain-woven cloth of unbleached hemp or flax. Canvas may be of many weights and qualities. It is used for a variety of purposes for which strength and durability are required. The heavier grades are used for tents, and for the sails of ships. Ships with all sails spread are said to be under heavy canvas. The smoothest varieties are used as a ground for embroidery and, stretched on frames, for oil paintings. Artists sometimes speak of paintings as canvases. Many grades are used by tailors and dressmakers to stiffen certain parts of garments. The canvasback duck is so called because the back, when plucked, has the appearance of a piece of white, finely ridged and reticulated canvas. From the use of canvas as a sifting or bolting cloth in mills, we acquire the expression *to canvass,* meaning to sift or examine with care. See BAYEUX TAPESTRY.

Canyon. See GRAND CANYON; COLORADO RIVER.

Caoutchouc, kōō′chōōk, another name for rubber. See RUBBER.

Cap, a head covering provided sometimes with a visor, but without a brim. The cap was unknown among the ancients. Its introduction is credited to the French about the middle of the fifteenth century. When introduced none but the nobility were allowed to wear velvet caps, and its use was confined otherwise largely to the clergy and university students. In heraldry, the cap is an aristocratic symbol of freedom, whence the liberty cap on our coins. See HAT.

Capaneus. See SEVEN AGAINST THEBES.

Cape Breton Island, an island of northeastern Nova Scotia. It is separated from the peninsula of the mainland by the Strait of Canso, sixteen miles long and nowhere to exceed two miles in width. A deep bay cuts the island almost in two. The island was settled first by the French, who called it Isle Royale. It was defended by the fortress of Louisburg. The island was ceded to Great Britain in 1763, and was united to Nova Scotia in 1820. Area, 3,120 square miles. Population, 1921, 131,495. The chief town is Sydney. A superior quality of bituminous coal is mined there. See NOVA SCOTIA.

Cape Cod, a curved cape and peninsula forming the southern boundary of Massachusetts Bay. It is about sixty-five miles in length and varies from a mile to twenty miles in width. The surface con-

sists largely of bogs and shifting sands. The inhabitants are engaged in fishing and other occupations, depending largely on the sea. A canal has been completed to shorten the distance by sea from Boston to southern ports. Cape Cod was discovered by Captain Gosnold in 1602, and the name was given because of the number of codfish taken near it. Thoreau has written a very interesting volume, entitled *Cape Cod,* in which he makes many shrewd and instructive observations. The chief town is Provincetown, reached by rail. See DUNES; CRANBERRY; GERRYMANDER.

Cape Hatteras, a sandy spit forming the most eastern point of North Carolina. It is separated from the mainland by a shallow body of water called Pamlico Sound. The meeting of cool breezes from the north with the land breezes and the hot air of the Gulf Stream creates storms here, making the vicinity of Cape Hatteras one of the most dangerous regions on the Atlantic coast. A large lighthouse with powerful lamps is maintained by the government to warn ships off the shore. The latitude of the lighthouse is 35° 15′ 14″ N.; longitude, 75° 31′ 17″ W. Birds migrating southward are dazzled by the light, and strike the tower in great numbers. Collectors obtain many rare specimens in this way.

Cape Horn, the southern point of the most southerly island of South America. Latitude, 55° 59′ S.; longitude, 69° 16′ W. It is a precipitous rock over 500 feet high. Currents from the Pacific and the Atlantic meet here, and fierce storms make the passage one much dreaded by sailors. It was named in 1616 by Dutch navigators from the town of Hoorn, Holland. English people have dropped an *o* out of the name. Sailors avoid rounding the Horn by taking a short cut to the northward through the Straits of Magellan. A floating cask is used as a postoffice. Passing ships send off a boat to leave and take mail. See MAGELLAN.

Cape of Good Hope, a promontory near the southern extremity of Africa. Cape Agulhas, 100 miles to the southeast, is the extremity of the continent. Cape of Good Hope is situated in latitude 34° 21′ S.; longitude 18° 30′ E. It was discovered in 1487 by the Portuguese navigator, Bartholomew Diaz, and doubled again by Vasco da Gama in 1497. These navigators were exploring the coast in search of a sea route from western Europe to India. Diaz named it "Cape of Storms," but King John of Portugal, who had high hopes of commercial advantage from the new route, insisted on the present name. The promontory follows a curve perhaps thirty miles in length. The very tip is known as Vasco da Gama Hill. Table Mountain, a flat-topped elevation, 3,585 feet high, is about thirty miles from the tip. The name is taken from the flat table-like top, but it is rendered still more appropriate by the mists and clouds which not infrequently spread over the surface and hang over the sides like a table cloth. A British naval station is maintained within the eastern shelter of the Cape. Cape Town nestles at the foot of Table Mountain, fronting a bay that opens to the west. See GAMA; DIAS.

Cape of Good Hope, a province in the union of South Africa, occupying the southern point of Africa. Settlements were begun by the Dutch in 1652. The British took possession in 1795 and forced a sale to themselves at $30,000. The colony has been enlarged by successive additions, until it comprises not only the territory lying south of the Orange River, but a considerable interior tract north of that river, in all an area of 276,995 square miles. It is now larger than Texas. The former and seemingly more appropriate name of Cape Colony has been changed to Cape of Good Hope Colony. The population in 1921 was returned at 2,781,185, an average of 8.7 per square mile. Three-fourths of the inhabitants are colored. Half of the white people are Dutch.

The government consists of a governor and an elective parliament of two houses. English is the official language, but members may address the house in Dutch if they so prefer. Elections are by ballot. Electors must be householders, occupying a house worth $350, or be earners of a salary of not less than $250 a year. In

addition, a voter must be able to write his own name. These precautions are taken to shut out the ignorant natives; but the line, as enforced, is an educational and property line, not a color line. Attendance at school is not compulsory. White children are provided with public and private schools. About one-sixth of the negro children are in school.

The principal towns are Cape Town and Kimberley. The surface is rugged and elevated; large portions of the country are still in a state of nature. The forest still shelters the African elephant. The baboon still haunts the rocks. The leopard, jackal, and antelope are found in the plains. The lion and giraffe are extinct. The ostrich is now bred in captivity for the sake of its feathers. Over $9,000,000 worth were exported in 1907. Diamonds, gold, copper, valuable woods, grain, fruits, wool, sheep, feathers, and hides are the chief exports. In 1907 colonial products to the amount of $220,000,000 were exported, chiefly to London.

The mean temperature at Cape Town is sixty-two degrees. Generally speaking, the colony is lacking in rainfall. Irrigation is carried on extensively. One reservoir covers nineteen square miles and holds 35,000,000,000,000 gallons of water. Wheat, oats, barley, rye, oat-hay, and wine are produced. There were in 1904 1,954,000 cattle, 420,000 horses, 12,000,000 sheep, 7,000,000 goats, 385,000 pigs, and 357,970 ostriches.

The colony maintains a university of seven colleges. There are 131 public libraries, 1,800 churches, over 2,000 schools, and 100 newspapers.

Caper, a trailing shrub growing on old walls, rubbish heaps, and the like in Mediterranean countries. The unopened flower buds when put down in vinegar are called capers. These pickles are much used, especially in making caper sauce to serve with boiled mutton. The taste is sharp and bitter, quite unpleasant to those not accustomed to it. Travelers speak of the profuse white and purple flowers as an ornament of the rubbish heaps and ruins of the Levant. The plant was introduced into Great Britain as early as 1596.

Capercailzie, kā-per-kāl′zĭ, a fine, large bird of the grouse kind. The male bird weighs up to fifteen pounds. Its plumage is variegated,—black, brown, and white with a dark green breast and a patch of naked scarlet skin over one eye. It is found in extensive woods, and is often called the "cock of the woods." It feeds on berries and buds and the tender shoots of fir. Formerly common to northern Europe, it is now confined to the evergreen covered mountains of Scotland, Scandinavia, Russia, and possibly portions of Asia.

Capetians, or **House of Capet,** a royal family of France, reigning 987-1547. Hugh Capet, the first of the line, was elected by a council of nobles and clergy to succeed Louis V, the last of the Carolingians. He was a lay abbot and wore a capet, or abbot's cape, of gray wool,—hence the name Capetian. Hugh was crowned king of the Gauls, Bretons, Danes, Normans, Aquitanians, Goths, Spaniards, and Gascons. It remained for the Capetians to weld together these diverse elements and create a nation. The provinces of France, each under its own ruler, had the notion of states' rights. The king had no power of general taxation. His income came from his own possessions. He had his local army, as each feudal lord had his; but there was no national army. Each feudal lord legislated for his own territory; there were no national laws enforced by central authority. To overcome these evils and create France, the unit, was, therefore, the work accomplished by the descendants of old Hugh Capet. The crown passed from father to oldest son eleven times, then twice to younger sons, then in 1328 to a cousin, Philip VI. He and his successors were Capetians by blood, but are known as the House of Valois. Indeed, all the later French kings were descended from Hugh Capet. The following table gives the Capetian kings with the dates of accession:

Hugh Capet	987	Philip II (Augustus)	1180
Robert II	996	Louis VIII	1223
Henry I	1031	Louis IX (the Saint)	1226
Philip I	1060	Philip III	1270
Louis VI	1108		
Louis VII	1137		

Philip IV (the Fair)	1285	Charles VI	1380
Louis X	1314	Charles VII	1422
Philip V	1316	Louis XI	1461
Charles IV	1322	Charles VIII	1483
Philip VI (Valois)	1328	Louis XII	1498
John	1350	Francis I	1515
Charles V (the Wise)	1364	Henry II	1547
		Francis II	1559
		Charles IX	1560
		Henry III.	1574-1589

There is no other modern nation which owes so heavy a debt of gratitude to its ancient line of kings as the French. France, as it exists today, and has existed through all modern history, with all its glorious achievements, is their creation and that of no one else.—George Burton Adams.

Cape to Cairo Railway, a British project for the construction of a continuous railway from the Cape of Good Hope to the city of Cairo on the Nile. It is on the very verge of completion and constitutes the trunk of a vast system of steamboat, motor, and rail connections destined to make the "Dark Continent" glow with the light of civilization. The World War hastened its progress, that it might serve the Belgian military expedition against German East Africa. The length of the route is about 6,800 miles, the longest railway line in the world. London papers used to discuss the Cape-to-Cairo idea much as they would discuss a line to the moon; but now the idea is like a dream come true. The system up to date has covered more than a decade in construction. Above all it is important in relation to adjacent transportation routes that eventually will bring to the commerce of the world great natural riches and opportunities. The record trip across the continent by this route is thirty-five days, made by a French officer during the war. Ordinarily the distance from Cape Town to Cairo may be covered in from 50 to 60 days.

Cape Town, the capital of Cape of Good Hope. It is situated at the foot of Table Mountain, about thirty miles from the tip of the cape, and fronts Table Bay, opening upon the Atlantic westward. The town was well laid out originally by the Dutch, who still form over half of the white population. Travelers are interested in Table Mountain, the Cape Astronomical Observatory, and a botanic garden of fourteen acres. The city is well built. There are many fine churches. The most prominent is the Roman Catholic cathedral. The capitol is a commanding edifice of recent construction. Cape Town is the educational and commercial center of South Africa. The harbor is protected by a breakwater nearly a mile long. There are two large docks affording opportunity to repair ships and to scrape off barnacles. The Great Western Railway, the first link in the Cape to Cairo route, runs north from Cape Town. The population in 1921 was 206,558.

Capillaries, in anatomy, fine hair-like tubes or blood vessels that lead from the ends of the arteries to the beginning of the veins. The diameter of a capillary is such as to allow a roll of blood disks or corpuscles to pass freely. They are so numerous, and they form so fine a network in ordinary parts of the body, that some are sure to be pierced by the prick of a pin. See BLOOD; CIRCULATION.

Capillar'ity, the phenomenon exhibited by liquids in their tendency to rise or be depressed near the walls of a containing vessel or within tubes thrust into the liquids. It is due to the relative attraction between the particles of the liquid for each other and for the material of the vessel. If the liquid adheres to the tube or wets it, as when a glass tube is put in water, it rises in the tube; if it does not adhere, as in mercury, it is depressed. The smaller the tube, the greater the elevation or depression.

Familiar examples of this same principle are the rise of ink in a blotter, or of oil in the wick of a lamp. By it also sap rises in trees, and fluids circulate through porous animal tissues. Capillarity is the explanation of the ability of water to rise above its natural level in soils and to furnish moisture for vegetation impossible without it. When the soil is compact so that the spaces are small, the moisture rises readily and is lost by evaporation. If, however, the surface is broken up, loosened and pulverized this loss is prevented. This is one of the means by which moisture is conserved in semi-arid regions, and is a principle in so-called dry-farming methods. See DRY FARMING.

Capital Punishment, the taking of life as a penalty for wrongdoing. In England, prior to the American Revolution, 160 offenses were punishable with death. Among these were shoplifting, or stealing in shops to the amount of five shillings, and counterfeiting revenue stamps placed on perfumery and hair powder. Stealing a sheep was visited with the same penalty as killing a man. The main object of punishment being to deter others from committing crimes, the advisability of capital punishment has been questioned; imprisonment for life has been suggested, but few believe that a life sentence is dreaded as much as a death sentence. In England and other civilized countries death is now the penalty for murder and treason only. In the army and navy, offenders may be shot for various military offenses, including desertion and disobedience, and dangerous neglect of duty. President Lincoln interfered, it may be remembered, to save the life of a young sentry who had fallen asleep at the post of duty. Death by torture, such as burning at the stake and breaking on the wheel is no longer permitted by humane governments. Beheading and hanging are the usual methods. Electrocution, or death by a current of electricity, is instantaneous, and has been tried with success. It is prescribed by the laws of some states. Opinion in favor of executions removed from the public gaze is growing. The hour chosen is not infrequently midnight. In the United States the sentence of a court requires to be approved and the date of execution set by the governor.

Capitol, in American history, the official building at Washington occupied by Congress. A state capitol is occupied by a legislature and, ordinarily, by state officers. The term corresponds to Parliament House in England and the colonies. The capitol of Rome stood on the Capitoline Hill. It was the central temple in which Jupiter, Juno, and Minerva were worshiped.

The United States Capitol is situated on a low hill ninety-seven feet above the Potomac and one and one-third miles from the White House. The corner stone of the central building was laid by George Washington September 13, 1793. The building was partially destroyed by the British in 1814. The damage was repaired and the building completed by 1827. This portion consists of a rotunda and two short wings. It faces the east with a rear entrance on the west. The rotunda is an immense circular hall ninety-seven feet in diameter, springing from the floor to the vaulted ceiling of the dome overhead 180 feet in the clear. The outside height of the dome, including the statue of Freedom, is 307½ feet. The dome itself, the crowning glory of the city, is made of iron and weighs nearly 9,000,000 pounds. It is so constructed that it may contract and expand with change of temperature like the folding and unfolding of the petals of a lily. It may be ascended by a spiral stairway for a view of the city. In 1851-9, an extension, almost as large as the main building, was constructed on the south for the House and one to balance on the north for the Senate. They are connected with the main building by corridors. The old Senate chamber is occupied by the supreme court. Congress has directed an enlargement of the main building toward the east to provide more committee rooms. The central part of the building is of Virginia sandstone. The extensions are of Massachusetts marble; the columns of the grand portico are single stones of Maryland marble. The sandstone has been painted white to harmonize.

The historical paintings, statues of public men, bronze groups, corridors, and stairways are most instructive. The entire building, including the halls of Congress, except when actually in use, is open to visitors freely. Every effort is made to have the people feel that it is their own.

Capri, kä′prē, or **Goat Island,** an island in the Bay of Naples. Its area is about ten square miles. The inhabitants number between 4,000 and 5,000. They are occupied chiefly in fishing and in raising olives and grapes. Capri wine is famous. In the migrating season immense flocks of quails light to feed and rest.

They are taken in great numbers. Capri is noted chiefly for a number of remarkable grottoes or caves in the steep limestone coast. They are entered by boats. One is known as the blue grotto, another as the green, from the soft, delightful colors that prevail within. It is thought that the rays of the sun enter the sea and are decomposed, as in the case of the rainbow, and that only the blue or the green portion of the spectrum, as the case may be, is refracted at an angle requisite to enter the cave. The island is about nineteen miles from the city of Naples. It is a favorite resort of tourists and of artists.

Captain Cuttle, a character in Dickens' *Dombey and Son.* He is a retired sailor, "a very salt-looking man indeed." On his first appearance on the scene he is described as "a gentleman in a wide suit of blue, with a hook instead of a hand attached to his right wrist; very bushy black eyebrows, and a thick stick in his left hand covered all over (like his nose) with knobs." Captain Cuttle is an intimate friend of Sol Gills, the ship's instrument maker. He is a simple, trustful, kind-hearted old fellow who, when he sees a friend in misfortune, is given to producing and handing over his store of worldly wealth, "two withered atomies of teaspoons, an obsolete pair of knock-kneed sugar tongs, an immense double-cased silver watch," and a little cash. He decides to give the watch to Walter, old Sol's nephew, as the young fellow, whose prospects are far from bright, is starting on a sea voyage.

> The captain drew Walter into a corner, and with a great effort, that made his face very red, pulled up the silver watch, which was so big, and so tight in his pocket, that it came out like a bung.
>
> "Wal'r," said the captain, handing it over, and shaking him heartily by the hand, "a parting gift, my lad. Put it back half an hour every morning, and about another quarter towards the arternoon, and it 's a watch that 'll do you credit."

A favorite expression of Captain Cuttle's, frequently quoted, is, "when found make a note of."

Capua, a city of ancient Italy. It was situated in the Plain of Campania, seventeen miles north from Naples. It was founded by the Etruscans, came under Samnite rule about 423 B. C., and was taken over by the Romans in 340 B. C. Capua was second only to Rome in size and exceeded that city in wealth and luxury. Capua opened its gates to Hannibal, who wintered here 216-15 B. C. The Romans retook the city and punished the inhabitants for disloyalty. Capua was headquarters for gladiatorial sports. The remains of an amphitheater rival those of the Roman Colosseum. Capua was sacked by Genseric 456 A. D., and was destroyed by the Saracens in 840. The site is now occupied by a small Italian village. See CAMPANIA; GLADIATOR.

Capuchin, a branch of the monastic order of St. Francis. The order was a seceding body of men who desired to reform the Franciscans by a return to greater austerity of life. By a bull of Pope Clement VII, Capuchins obtained leave to wear a pointed hood or capuccio, from which comes the name Capuchins. "Consistently with the austerity of their professions, their churches were unadorned, and their convents built in the simplest style. They became very serviceable to the Church, and their fearlessness and assiduity in waiting upon the sick during the plague, which ravaged the whole of Italy, made them extremely popular." In the United States they have houses in New York, Milwaukee, and elsewhere.

Capulet, kăp'u-lĕt, the father of Juliet in Shakespeare's *Romeo and Juliet.* The name is the English spelling of Cappelletti, a noble family of northern Italy, according to the tradition of Verona. Shakespeare's Capulet, a self-willed, violent old man, is the head of the family and is at variance with the house of Montague, another noble Veronese family. See ROMEO AND JULIET.

Capybara, kä-pe-bä'rà, a water-loving animal found in the tropical regions of South America, especially in the waters of the Orinoco, the Amazon, and the La Plata. It is the largest rodent known. It belongs to the guinea-pig family. It is intermediate between the hare and the porcupine. It has a massive body covered

with brown hair, and bare legs terminating in feet shaped rather for swimming than for walking. It has the stumpy tail of a small rabbit, a broad, flat head, small ears, the eyes of a pig, a broad nose, and teeth shaped like those of a muskrat. The Dutch settlers call it a water hare and sometimes a water hog. It lives in the grass along edges of streams, and takes to the water on the slightest alarm. It is the natural food of the South American anaconda, or water constrictor. It is an inoffensive animal. It attains a weight of 100 pounds. Its flesh is considered good eating. Its teeth are suitable for cutting off grass and sugar-cane, on which it chiefly feeds. Its visits are dreaded by the planter. See GUINEA-PIG.

Car, a term applied to several vehicles, but most frequently to a wagon drawn or propelled by mechanical power on some sort of a track or railway. The use of cars preceded the invention of the locomotive. The first freight and passenger cars were coaches drawn by animal power. The car drawn by Stevenson's first locomotive was a small, comfortless, wooden-seated affair, made out of an ordinary coach, very different from the palace of wood, iron, glass, and upholstery now found on American railways. In fact, the first passenger cars used in this country were the bodies of four-horse coaches set in a wheel-bearing frame, and the earliest railway cars were built on much the same model. Some were open or without a top, and some were built with outside seats on the top as well as seats inside. About 1833 the long passenger car with entrances at the ends made its appearance. It was described in England as an American contrivance built rather on the model of a ship than on that of a coach.

The first sleeping car ran between Philadelphia and Baltimore in 1838. It accommodated twenty-four passengers. In 1858 two sleeping cars were built at a cost of $5,000 for the two, for the run between Buffalo and Cleveland, but were not a profitable venture. In 1863 the first regular Pullman was built at a cost of $18,000, then considered a prodigious venture of money. The platform vestibule was thought out in 1887. Postal cars date from 1860.

The passenger coaches of Europe are divided by cross partitions into entirely distinct compartments. Each compartment has two doors, one on each side of the car. To pass from one compartment to another it is necessary to alight from the car and walk along an outside footboard or the station platform. It is quite out of the question to pass through a train. Each compartment seats ten passengers, five facing forward and five backward.

The latest available statistics show that the various American railroads maintain 1,300 car shops for the repair and manufacture of cars, and give additional patronage to sixty-five car-building establishments. Over 200,000 people earn wages by building cars. Freight cars last about twelve or fifteen years. They wear out so fast that 125,000 new freight cars must be built in the United States each year. In addition, the factories expect to build about 2,000 passenger coaches and 10,000 to 15,000 new street cars yearly. Five states, Pennsylvania, Illinois, New York, Indiana and Ohio build over half of the cars needed. Many American cars are sold abroad. The export sales for 1900 aggregated $2,558,320, chiefly to Mexico, Egypt, France, Brazil, Great Britain, Argentine, Australia, and Cuba. It is estimated that there were, before the war, about 225,000 passenger coaches and 3,000,000 freight cars. Practically all steam railway passenger coaches in the United States are now made of steel and are electrically lighted. Danger of fire after a wreck is greatly diminished thereby.

At the master car-builders' convention held in 1917 it was stated that there are approximately 65,000 locomotives, 55,000 passenger coaches, and 2,500,000 freight cars in use on the various railroads in the United States and Canada. The wear and tear of this equipment was said to be over $8,500,000 a year.

See RAILROAD.

Caracas, kä-rä'käs, the capital city of Venezuela. Latitude, 10° 32′ N.; longitude, 67° 4′ W. The city was founded by Spaniards in 1567. The name is de-

rived from that of a tribe of Indians inhabiting the valley in which the city is situated. Caracas lies at an elevation of 3,000 feet. It is the official and residence city. La Guayra, a few miles distant, is the port where business is done. A railway connects Caracas with La Guayra and three radiate from Caracas into the interior for ores and agricultural productions and forest products. The city is well built. National resources have been used freely in erecting a capitol, presidential residence, a national library, museum, etc. The most noteworthy church building is the cathedral, built about 1614. One public square is named for Bolivar; another for Washington. Electric lights, gas, telephone service, street railways, paving, clubs, business blocks, and hotels give the city a modern air. Population in 1905, about 80,000; La Guayra, 20,000.

Carat, kăr′ăt, a unit of weight for precious stones. The word is derived from the Arabic, having reference to the horn-shaped pod of a locust tree, whose dried beans were used as weights. By a conference of jewelers held at Amsterdam in 1877, the weight of a carat was fixed at 205 milligrams or 151.76 carats to the troy ounce. In estimating the fineness of precious metals a carat is a twenty-fourth part. A ring eighteen carats fine contains eighteen twenty-fourths of pure gold. The standard fineness of a wedding ring is twenty-two carats. A gold chain should not be over fourteen carats fine if wearing qualities are desired. Twenty-four carats fine is said to be "solid gold."

Caravan, a company of pilgrims or merchants associated for protection in traveling through the wastes of Asia and Africa. Before the discovery of the mariner's compass enabled sailors to venture out of sight of land, the commerce of the oriental countries was carried on overland by trains of laden camels. The cities of Asia Minor, of Syria, of the Tigris-Euphrates Valley, of Persia, and of Central Asia were built up by caravan traffic as railroads build up cities today. Ur of the Chaldees, Babylon, Nineveh, Cairo, Bagdad, and a hundred other cities of the ancient world were caravan centers of enormous business and wealth. Instead of railroad trains bringing and carrying goods long trains of camels from the East brought bales of rugs, carpets, shawls, tea, spices, perfumery, and gems from Persia, China, and India, and returned laden with western products brought by similar caravans to these centers of distribution.

Caravans were voluntary associations. The village merchant or chief with a few camels joined his neighbors at a central point, and traveled on to a larger center until, at a stated time, a multitude of camels and men gathered for a journey of months to a distant emporium as their fathers before them had done for a thousand years. As many as a thousand or even five thousand camels not infrequently traveled in a single caravan, winding through the sand-hills in a file two or three miles in length. Only the richest goods could bear the expense of distant caravan transportation. It is no fanciful computation to reckon that the merchants of an opulent oriental city may have imported or shipped out goods worth a million dollars by a single caravan. Each caravan chose its own leader. Laden camels traveled from eighteen to thirty miles a day. They were seemingly indifferent to where they went and had to be kept in line by drivers or they would wander away cropping shrubs, and be swallowed up in the desert.

Caravans are still the chief means of collecting and distributing goods in the northern part of Africa and in many parts of Asia; but the immense caravan business between central and western Asia has been broken up by railroads and steamers. At present the chief commercial caravan routes radiate from the seaports along the southern shore of the Mediterranean. Three notable caravans meet annually at a religious fair at Mecca. The Persians gathering at Bagdad, the Arabs of the Sahara, at Cairo, and the Arabians, at Damascus, come together at Mecca to sell and buy and to visit the tomb of Mahomet.

See ADEN; MECCA; CAMEL; TIMBUCTOO.

Caraway, a plant of the parsley family. It is found wild in southern Europe and some parts of Asia. The seeds are much used for flavoring cookies, bread, and cheese. Caraway is also a medicine, and an oil pressed from the seed is used as a perfume. If left to do as it pleases caraway is pretty apt to take care of itself about dooryards.

Carbolic Acid, a well known compound of carbon, hydrogen, and oxygen. In the pure state, it takes the form of white crystalline needles. Ordinarily it is a liquid somewhat heavier than water, and having a slightly acid taste. It is obtained in the distillation of coal tar. Carbolic acid has many uses. It kills bacteria. Surgeons use a weak solution to sterilize their instruments and as an antiseptic dressing for wounds. Under medical advice it may be taken in minute quantities as a remedy. It is a rank poison. Two or three drops of pure carbolic acid are sufficient to cause death. It is terribly painful in its action. Alcohol is the best antidote. See MEDICINE.

Carbon, one of the important chemical elements. Pure carbon occurs in two widely different forms, the diamond and graphite or plumbago. Charcoal, soft coal, and hard coal are largely carbon. The purer the carbon, the better the quality of the coal. Under ordinary circumstances carbon is an inactive element. A piece of charcoal, or graphite, or a diamond will lie for ages in ordinary water unchanged. They are without taste or odor and cannot be melted; yet under favorable conditions carbon is distinguished for the number of chemical combinations into which it enters.

Carbon is the great fuel. Under the influence of heat it burns; that is, it unites with oxygen and disappears in a gas. In coal, kerosene, gas, oil, fat, lard, tallow, suet, blubber, wood, or any form of fuel whatever, carbon is the element which burns and, uniting with oxygen, gives heat and light.

Carbon is an important and indispensable part of animal and plant life. Any substance that chars with heat contains carbon. Charcoal is merely the carbon of wood left behind when the volatile parts of the wood are evaporated by heat. A black char of carbon may be obtained from any flesh or vegetable substance by driving off the other substances by heating.

Black as carbon is, it is an important part of all the grains. Green grass, hay, sugar, starch, alcohol, limestone, marble, and chalk contain carbon. It is present in tea, coffee, bread, wine, vinegar, milk, and in almost every article, especially fatty articles of food. A trace is present in all spring water, and mineral waters of note contain considerable quantities of carbon.

Carbonari, kär-bō-nä′ri, a secret revolutionary society in Italy. It was formed in the days of Napoleon to drive out the French. It was prolonged to expel the Austrians and to unite Italy. The name signifies charcoal burners. Their places of meeting were called huts; Italy, the forest; and their enemies, the wolves. They were known to each other as good cousins. They had no central organization. Their number, therefore, is not known, but is estimated at half a million in 1820-1. They imitated many observances of the Masons. The order was succeeded by Young Italy, founded by Mazzini.

Carbon Dioxide, or **Carbonic Acid Gas,** a well known compound containing one atom of carbon and two of oxygen. It is colorless. It exists in small quantities in atmospheric air, from three to four parts in every ten thousand being carbon dioxide. It escapes from many mineral springs, and is found at the bottom of mines and in caves. It is formed also by the imperfect burning of fuel, by the breathing of animals, by fermentation, and by the decay of animal and vegetable matter. Like other animals, people emit carbon dioxide in breathing. Carbon dioxide is incombustible. It will put out the flame of a lighted candle, gas jet, or even a piece of burning phosphorus, when these are placed in a jar filled with the gas. It is not poisonous, but it does not support animal life. Carbon dioxide in the air prevents the lungs from obtaining needed oxygen. A person dies in air con-

taining an excess of carbon dioxide just as he dies in water, not by reason of poisonous qualities belonging to the carbon dioxide or to the water, but because air is shut out of the lungs. For this reason dwelling houses, especially sleeping rooms, should be ventilated thoroughly. Being heavier than air the carbonic gas settles to the floor. In Paris the city poundmaster incloses stray dogs, thirty at a time, in an iron lethal chamber and drives in carbonic acid gas. In forty seconds death ensues from suffocation—want of air.

In volcanic regions where the crust of the earth is thin in places, carbon dioxide sometimes issues so abundantly as to form white, cloud-like masses above the fissures. In the region of Vesuvius, there are several such thin-crusted places. One is the crater of the extinct volcano, Solfatara; another is the so-called Grotta del Cane, or Cave of Dogs, near Naples. This cave receives its name from the fact that if dogs were thrown into it, or witlessly entered it, death followed in a few seconds. The Romans of Caesar's time used to throw in slaves whom they wished to kill or other helpless creatures from whom they desired to free themselves. This cave, the Grotta del Cane, can be seen today in the same condition in which it existed during the time of the Roman Empire. The Upas Valley in Java, about three-fourths of a mile long, is another region in which carbon dioxide is fatal to animal life. No animal can live here. It is said that the valley is strewn with the bones of animals which have been suffocated by the fumes and with the remains of birds that have perished while flying over it.

While it is true that air is unfit to breathe if it contains an excess of carbon dioxide the reader should get away from the idea that it is a poison. In fact, the gas, like water, is one of the beneficent provisions of nature. It is present in small quantities in the atmosphere. Taken in through the breathing pores, the stomata of plants, it forms a large part of the tissues of the vegetable world. The starch of rice, wheat, corn, potatoes, and bananas, in short, of all starchy food plants, is built up out of carbon dioxide and water. The gas is inhaled with air by the leaves; the water is imbibed by the roots. Sugar-cane, the sugar beet, and all the fruits, build up their sweets from the same two materials obtained likewise by leaf and root. Fats are built up of starches or sugars, and are likewise composed of carbon dioxide and water. The farmer who sells fat hogs, fat steers, butter, cheese, sugar beets, sugar-cane, fine flour, and potatoes is marketing little but water and a gas, millions and billions of pounds of which are dissolved in the atmosphere.

Carbon dioxide is in the way in the lungs and it is cast out by the blood, yet it is, as we have seen, an important constituent of foods. While carbon dioxide is out of place when inhaled, it can be taken into the stomach and is then refreshing.

Under pressure of 450 pounds to the square inch at 5° below zero F., carbon dioxide changes to a liquid and it is stored in this form in steel bottles for use in soda fountains.

gence.

Carborundum, the trade name of a compound of silicon and carbon. It is produced by fusing sand and carbon. The process was hit upon about 1890. Two electric furnaces at Niagara Falls are the chief source of the commercial supply. About 1,500 tons are made yearly. Carborundum has superior qualities as glazing for fireproof brick used in furnace buildings. Furnace linings may be protected by a paste of finely ground carborundum applied with a brush. It is used chiefly as a substitute for corundum and emery in the manufacture of "emery" wheels for grinding tools. See CORUNDUM; EMERY.

Carboy. See BOTTLE; DEMIJOHN.

Cardiff Giant, an American fraud. In 1868 an adventurer purchased a block of gypsum from a quarryman at Fort Dodge, Iowa. He shipped it to Chicago, where it was given in charge of a sculptor, who carved it into a ten foot giant. He pricked it with needles while it was soft to give the surface the appearance of

the human skin, and treated it with acids to give it an ancient appearance. The giant was then packed in an iron box and shipped to Union, New York, where it was claimed by the owner, loaded on a large wagon, and drawn with four horses fifty miles to a farm near Cardiff, a post village in Onondaga County. The giant was buried and remained until October 16, 1869, nearly a year, when it was "accidentally" discovered by men who were pretending to dig a well. The petrified giant, as it was called, created the greatest astonishment. The lucky finders covered it with a tent. Special trains were run from New York City. It is estimated that 50,000 people paid a dollar apiece to see the wonder. Even men who prided themselves on scientific knowledge were for a time deceived. Finally, however, one of them broke off a fragment and discovered that it consisted, not of stone, but of gypsum, a soft substance resembling plaster of Paris. The perpetrators owned up to the fraud. The Cardiff giant was the most successful hoax ever perpetrated upon the American people. See BARNUM; GYPSUM.

Cardinal Bird, or **Cardinal Grosbeak,** a member of the sparrow or finch family. The cardinal is a lordly, clumsy, rose-red fellow with a large crest and a black throat. The female is olive brown. The cardinal breeds from Minnesota to the Gulf and eastward, nesting in bushes and making itself useful by eating grubs and worms. Both sexes sing well, and are favorite cage birds. Mrs. Olive Thorne Miller has written entertainingly of the cardinal.

One's first impression of the cardinal grosbeak will usually be that he is rather a clumsy fellow. His body appears to be stiff, as if it were made of wood, different in every way from the pliant, lithe body of the catbird, for example. He hops about on the ground with tail held well up out of harm's way, and comes heavily down upon his feet, as if his body were really very solid. In fact, he is not at all a graceful bird. . . .

As the head of a family, the cardinal is admirable, not only in his attentions to his lovely dove-colored mate, but in singing to her by the hour, and in protecting her from intrusion or danger. To the young in the nest he is an untiring provider of worms and grubs, and thus most useful in a garden. Nothing can be more comical than his behavior when he first conducts his young family out into the world while his mate is engaged with her second sitting. He is as fussy as any young mother, hopping about in great excitement, and appearing to think the whole world thirsting for the life of his pretty little ones.

The cardinal mother shows the restless manners and anxious spirit of her mate, taking one's intrusion upon her domestic affairs greatly to heart, and being so much disturbed that there is more pain than pleasure in making acquaintance with her nestlings.

See GROSBEAK.

Cardinals, next to the pope, the highest dignitaries in the Roman Catholic church. The college of cardinals, charged with the duty of electing the pope, consists of seventy members, though the college is seldom, if ever, full. The pope fills vacancies by appointment. Scarlet is the distinguishing color of the cardinal. The pope signifies an appointment by sending a messenger to place an official scarlet hat on the head of the bishop or archbishop whom he wishes to honor; hence the expression "to send a red hat," or, "to receive a red hat." Other articles of a cardinal's attire are a red cap, a purple cassock, a sapphire ring, and a mitre of white silk. Archbishop McClosky became the first American cardinal 1875. In 1906, 7 cardinals were Spanish; 6 French; 3 German; 1 Belgian; 1 Brazilian; 3 Austrian; 2 Hungarian; 1 American; 1 Bohemian; 3 British and Irish; the rest were Italians. See PAPACY.

Carding and Combing, in the manufacture of textiles, processes employed to prepare raw cotton, wool, silk, etc., for spinning. The terms are often used synonymously, and the two processes are closely related, combing being a continuation of the carding principle. Carding opens up or loosens the raw material, pulling fiber from fiber, tearing apart any that are matted and leaving the mass loose, free, and soft. Combing extracts from this mass short and broken fibers, and lays the long fibers in a parallel position. Both processes help to free the fiber from small foreign litter, broken leaves, stems, sand, etc. It is evident that material of very short fiber, like American cotton, the fibers of which are less than an inch in length, cannot be combed success-

fully, but that the process of combing, when it can be employed, produces a smoother and stronger yarn than that made by carding alone. A description of the implements used formerly in hand carding and combing may serve to make clear the distinction in the two processes.

The hand method of carding is still used by housewives to prepare small quantities of wool for domestic purposes, or to renovate wool which has become matted by use. Two "cards" are used. These are simply oblong pieces of wood set with short iron teeth, as a brush is set with bristles, and furnished with handles. One card is held in the left hand with teeth uppermost. A quantity of cleaned and scoured wool is placed on this card. The other card, held in the right hand, is drawn over the wool gently. This process is repeated over and over until the mass is torn up and blended and distributed evenly over the cards. The wool is then lifted from the card and is shaped gently in the hands into a loose roll ready for spinning.

In combing by hand two "combs" are used. These are strips of wood furnished with handles and set with two rows of long steel teeth or spikes. The workman attaches one of his combs, teeth outward, to a comb-post. He then seizes a handful of the wool, which is warmed and oiled, and draws it through the comb, leaving a portion caught in the teeth. In this way he fills both combs with fiber. Then, holding one comb in his left hand, he takes the other in his right, and combs out the entangled fibers, first those near the tips of the teeth, gradually working deeper and deeper into the mass. At the last the teeth are worked close up to each other. If one possesses the skill and "knack" for this work, the result is the extraction of short fibers and the laying of longer ones in a comparatively parallel position. Machinery is now in use to perform both processes of carding and combing.

Wool is always carded. It is combed only when it is to be spun into "worsted" yarns. In this process the laying of the fiber in a parallel position is called frequently "gilling," the word "combing" having reference to the removal of short fibers. The machine employed is intricate and delicate. Formerly cotton was spun without either carding or combing. At present it is carded usually, but for ordinary purposes a sufficiently good quality of yarn is produced without the additional process of combing.

Three distinct operations are included under carding. Opening, that is, loosening up the masses of fiber and removing heavy impurities; scutching, which still further cleanses the fiber and spreads it into a wide "lap"; and carding proper, which continues the opening process until the fibers are separated one from the other, removes many short, unripe, and broken fibers, together with fine sand and other foreign particles, and finally reduces the lap or sheet to a loose, soft, continuous rope, called a "sliver." This is regarded as one of the most beautiful processes that can be seen in a mill or factory. One yard of the "lap" from the scutcher weighs about one hundred times as much as does the "sliver" into which it is made in the carding machine. Some idea of the cotton carding machine may be had from the statement that a cylinder of this machine, forty inches wide and fifty inches in diameter, bears over 3,000,000 teeth.

For sewing and machine thread, fine hosiery, lace curtains, imitation silks, and certain fine cotton fabrics, the combing of the fiber is considered essential. Sea-island and brown Egyptian cotton are classed as long-stapled, because the fiber is sufficiently long to admit of combing. No machine in cotton spinning adds one-half as much to the expense of producing the yarns as does the comber. One reason for this is the fact that the comber makes about seventeen per cent of waste, which is as much as the combined waste of all the other machines in the mill.

In the manufacture of silk textiles, the "reel" silk needs no carding or combing. The "spun" or waste silk is carded and combed by processes resembling those used in carding cotton. In preparing flax for spinning, the process which cor-

responds with carding and combing is called hackling.

Cards, oblong bits of pasteboard used in playing various games. A pack of ordinary playing cards consists of four suits of thirteen cards each, or fifty-two cards in all. The suits are marked with hearts, diamonds, clubs, and spades respectively. Each suit contains a king, queen, knave, and ten cards ranging from a ten spot down to a one spot known as an ace. The cards rank in the order named, though in some games exceptions are made. In whist, for instance, ace is the highest. In euchre the knaves or jacks, as they are also called, outrank. In most games a particular suit is called trumps, in which case any card of that suit outranks even a king or an ace of any other suit. In many games a fifty-third card, called a joker, is added. The joker is always a trump and is the highest card in the pack.

Cards are thought to be of eastern origin. They made their way westward along the lines of caravan travel, and may have been introduced into Europe by the Saracens. The modern figures on cards are said to have been invented in France fifty years before the discovery of America. The four suits stood for four ranks in society. Hearts is an English corruption of a French word meaning choirmen or clergy; spades is likewise a corruption of a Spanish word signifying the sword. They represent the soldiers; clubs, the clover leaf, is the suit of the peasantry; and diamonds represent the square tiles or caps of the merchants. These names are by no means universal. The suits in an Italian and Spanish deck of cards were known as cups, swords, money, and clubs. The German suits were hearts, leaves, bells, and acorns. The Hindus played with geese, birds, camels, and horses.

Some games of cards, as poker and hearts, may be played by a circle. The different games of whist are played by four persons. Two may play at cribbage, penuchle, and bezique. Solitaire, in all its forms, is a game to be played alone.

See GAMES.

Carex. See SEDGE.

Caribbean Sea, an arm of the Atlantic, lying between the West Indies and the coasts of Central and South America. The Caribbean is larger than the Gulf of Mexico. Its basin comprises 750,000 square miles—one-fourth as large as the United States. The basin is a huge mountain cup. The coasts are not continuous, but they are everywhere mountainous. The water varies in depth from shallows to abysses. The floor of the sea is uneven. Bartlett Trough is described as a chasm a few miles wide but hundreds of miles in length and three miles deep. An equatorial current enters the Caribbean Sea through the passages of the Windward Islands and, continuing westward, sweeps through Yucatan Channel into the Gulf of Mexico. The trade winds bring tropical moisture that falls—literally falls—in sheets that the inhabitants of more temperate climes know not of. Destructive tempests are not infrequent. The temperature is "modified by the trade winds," but to the northern traveler the navigation of the Caribbean is associated with much torrid discomfort. The name is derived from the Caribs, an Indian family yet dwelling in places on the coasts and islands of this great sea.

Caribou, kăr′ĭ-bōō, an American reindeer ranging from Maine to Lake Superior and northward. With the exception of the musk-ox, it ranges farther north than any other hoofed animal. There are two groups or species, the woodland and the barren ground caribou. The latter ranges further to the north, beyond the limit of timber, but retires southward in herds of thousands in the winter time. The woodland caribou is of a dun gray color and is about three and one-half feet high at the shoulder. Its fleetness reminds one of the antelope. It lives mainly on lichens. The antlers are flattened somewhat like those of a moose. Its numbers have been greatly diminished by persistent and merciless hunting. An interesting account of a caribou school, as well as other sketches of caribou life, are given by William J. Long in his *Wilderness Ways.* See REINDEER.

Caricature, an absurd or laughable exaggeration. To be successful, caricature must be founded on fact. A person with a short chin may be represented with an absurdly short chin; one with a long chin with an absurdly long chin. The Japs may be represented as midgets because they are not large, but it would not be caricature to represent them as giants in stature. Successful caricature must lean in the same direction as the facts. Caricature may be drawn with a pen or a pencil. In *Hudibras,* Butler caricatures the Puritan. Cervantes' *Don Quixote* is a caricature of the knight and his squire. The writings of Steele and Addison in the *Spectator* are full of caricature. Hogarth caricatured London vices of the eighteenth century in several series of pictures. The London *Punch* caricatured President Lincoln. Thomas Nast and *Harper's Weekly* literally goaded Boss Tweed to his death. The picture of Tweed in prison stripes with a ball and chain on his leg is fixed in the history of New York. Comic pictures are usually caricatures. They are becoming more and more a feature of the newspaper. An editorial may be unread for want of time, but a picture of a notoriously corrupt city council with masks, dark lanterns, and burglar's jimmies, engaged in prying open the public treasury, is taken in at a glance and fastens itself upon the retina of the mind as well. The coarse work of cheap St. Valentine prints has no place in art. Effective caricature requires talent and study. See NAST; PUNCH; THACKERAY; TWEED; HOGARTH.

Carleton, Will (1845-1912), an American poet. He was born at Hudson, Michigan, and educated at Hillsdale College. He made his home for some years in Brooklyn, New York. He wrote several volumes of verse. The best known are *Farm Ballads, Farm Legends, Farm Festivals, City Ballads, City Legends,* and *City Festivals.* Mr. Carleton was very successful as a lecturer and reader of his own ballads. Among his most popular poems are *Betsy and I are Out, Over the Hill to the Poor House, The First Settler's Story, The Chicago Fire,* and *The Christmas Baby.* Carleton was a poet of the home. He presents the humorous and tragic incidents of farm and country life in the form of dramatic monologue. His characters are honest, brave, and kindly. Their homely speech seems a fitting vehicle for the expression of deep but simple feeling. In *The New Church Organ* the good sister tells how she dislikes the "new machine," and disapproves of "praising the Lord by note":

"I've been a sister, good an' true,
For five-an'-thirty year;
I've done what seemed my part to do,
And prayed my duty clear;
But Death will stop my voice, I know,
For he is on my track;
And some day I to church will go,
And never more come back;
And when the folks gets up to sing—
Whene'er that time shall be—
I do not want no patent thing
A-squealin' over me!"

Carleton, Sir Guy (1724-1808), a British general and colonial governor. He was born in Ireland and entered the army at an early age. He saw active service under Amherst at Louisbourg in 1758, under Wolfe at Quebec the following year, and in the British attack in Havana in 1762. He became lieutenant governor of Quebec in 1766 and for the following 40 years was active in Canadian affairs. At the outbreak of the Revolution, he was commander of the British army in Canada, and defeated the attempts of the Americans to force Canada to join with them. He invaded New York in 1776, but was superseded in command the following year by General Burgoyne. In 1782 he again became the commander-in-chief of the British army in North America. He later became governor of Quebec, and was rewarded for his services in saving British North America to England by being created Baron Dorchester.

Carleton's fame rests not only on his military services, but also his ability in a governmental capacity. His position as an English governor over the recently conquered French was a delicate one. Though his rule was stern, it was humane and just. He is said to have inspired the Quebec Act of 1774 and helped frame the Act of 1791 by which Canada became two provinces.

Carleton, William (1798-1869), an Irish novelist. He was born in County Tyrone of humble parentage, with but such education as a hedge school and a brief term or two at an academy could afford. He went to Dublin, took up writing and there in 1830 published his first series of *Traits and Stories of the Irish Peasantry.*

The vein of Irish stories opened up by this writer is a delightful and pathetic one. Hedge schools, crop failures, shanty life, bog trotting, secret whiskey stills, wedding feasts, dances, races, deaths, wakes, fairs, boycotts, murder trials, and rescues are told with a keen zest worthy of comparison with Burns's *Tam o' Shanter,* Goldsmith's *Vicar of Wakefield,* and Irving's *Legend of Sleepy Hollow.* Carleton's other writings are *Fardarougha the Miser,* by many considered his best; *Valentine M'Clutchy; The Misfortunes of Barney Branigan;* and *Willie Reilly.* For several years before his death Carleton received a pension of $1,000 a year.

Carlisle, the seat of Cumberland, England. It is situated at the junction of three streams. Carlisle was an important Roman outpost. The Solway end of Hadrian's wall is near here. The Danes sacked the town in 875. Mary, Queen of Scots, was imprisoned here in 1568; the castle is still standing. The most noted building is a cathedral begun by William Rufus. The Norman nave has been destroyed. The choir, a beautiful building in itself, still stands. It is noted for a handsome stained glass window, fifty by thirty feet. There are important manufactures of gingham and other cotton goods. Population, about 45,000.

Carlisle, kär-līl′, **John Griffin** (1835-1910), an American statesman. He was born in Kentucky, and was educated for the practice of law. He was sent to the legislature and from 1871 to 1875 was lieutenant governor of his state. In 1877 he was elected to Congress. He served for seven terms, being speaker of the House from 1883 to 1889. In 1890 he was elected senator. In 1893 he was secretary of the treasury under President Cleveland, in which office he is remembered as having advocated the gold standard, and as having been connected with the sale of bonds to replenish the treasury's gold reserve. At the close of Cleveland's term of office, Carlisle took up the practice of law in New York.

Carlisle, kär-līl′, **Institute,** a government school for the higher education of Indian young men and women. It is located at Carlisle, Pennsylvania. The school had its origin in the work of Captain R. H. Pratt at St. Augustine, Florida, in 1875. Captain Pratt had in charge seventy-four Indian prisoners whom he undertook to educate along industrial lines. Four years later the school was removed to Carlisle, and a grant made for its support by the government. Literary subjects were introduced into the course of study, but various trades are also taught and it is customary to arrange for each student to spend a few weeks or months of the year in the family of some farmer. It is expected that he will earn wages, and will be given also an opportunity to learn the customs of white people.

Carlists, in history, the supporters of the pretension of Carlos, a brother of Ferdinand VII, to the Spanish throne. They were and are yet the Absolutists of Spain. In religion and politics a comparison may be drawn between Carlos and the Carlists of Spain and the Pretender and the Jacobites of Great Britain. See CASTELAR.

Carlovitz, or **Karlowitz, Peace of,** a peace concluded January 26, 1699, between Austria, Poland, Venice, Russia, and Turkey, with the good offices of England and the Netherlands. Austria received large accessions of territory in Transylvania and Hungary; Russia gained Azov on the Black Sea.

The treaty of Carlovitz is memorable, not only on account of the magnitude of the territorial change which it ratified; not only because it marks the period when men ceased to dread the Ottoman Empire as an aggressive power; but, also, because it was then that the Porte and Russia took part, for the first time, in a general European Congress; and because, by admitting to that Congress the representatives of England and Holland, neither of which states was a party to the war, both the Sultan and the Czar thus admitted the principle of intervention of the European powers, one with another, for

the sake of the general good.—Creasy, *History of the Ottoman Turks.*

Carlsbad, kärls'bäd (Charles's Bath), a city of Bohemia built up around the celebrated hot springs of that name. The name was given in honor of Emperor Charles IV, who is said to have discovered the value of their waters a hundred years before the birth of Columbus. The waters of the springs are charged with salts, and are of remarkable virtue in curing rheumatism, gout, and kindred ailments. The water is drunk on the spot. It is bottled also and sold throughout Europe and America. Carlsbad is a well built city of 15,000 inhabitants, with hotels, hospitals, theaters, opera houses, concert gardens, and every other convenience or luxury that wealth can supply. It has long been a brilliant social center. Archduke Ferdinand, George III, Augustus I of Poland, Peter the Great, Leibnitz, Maria Theresa, Goethe, Schiller, Beethoven, Wellington, Bismarck, and thousands of other celebrated persons, together with the aristocracy of Europe, have visited Carlsbad to regain their health or for social pleasures. About 25,000 summer visitors frequent the springs. The largest, the Sprudel, gushes up to a height of about three feet above the ground. The flow of the various springs is estimated at about 2,000,000 gallons daily. There are over fifty lace factories in the neighborhood.

Carlsruhe, kärls'rōō. See BADEN.

Carlyle, kär-līl', **Thomas** (1795-1881), an eminent man of letters. He was born in Ecclefechan, Dumfriesshire, Scotland. His father was a stone mason, known for intelligence and sterling worth. Carlyle himself says, "No man of my day or hardly any man can have had better parents." Young Thomas was so apt at his books that he could not remember the time when he was unable to read. He attended a nearby academy, taught school, and set out on foot for the University of Edinburgh. With the aid of oatmeal and cheese from home he boarded himself. He was an earnest student and a prodigious reader, learning more, he afterward claimed, from the university library than from his regular studies. "Nay, from the chaos of that library," says he, "I succeeded in fishing up more books than had been known to the keeper thereof." He studied theology, taught, and studied law, but could not tell which he hated worst. He became a tutor to two wealthy boys, and earned quite a sum of money with which he made himself comfortable, and assisted the folks at home.

Carlyle's likings were for literary work. In 1818 he settled down at Edinburgh and began writing articles for the various reviews. Here he married Jane Welsh, a superior woman, who had become interested in his literary struggles. After residing for a short time in Edinburgh, they removed to a small estate belonging to Mrs. Carlyle, known as Craigenputtock, or the Crag of the Hawks. Here Emerson visited him. Two men more unlike could not be found. Their friendship, however, continued through life.

Among other pieces of work, Carlyle here wrote his famous *Essay on Burns.* He was familiar with his subject and wrote in a sympathetic vein. It is not only his best essay, but the most suitable of his writings for young people. In 1834 he moved to London and settled in a suburb called Chelsea, where Mrs. Carlyle became noted for little receptions given to literary people. Carlyle was known as the "Sage of Chelsea."

Carlyle was a crabbed, bitter, dyspeptic man, of inflexible integrity, and unsparing in his criticisms. His works are hard to read, but are full of good thought. He was an earnest advocate of duty, hard work, and economy. Like Ruskin and other eminent British thinkers, he lacked faith in the ability of the common people to regulate affairs of state. He preached the doctrine that the leaders of society and government ought to be persons of great nobility of character, and of unselfishness, in whose ability and management the people should place implicit confidence. His *Heroes and Hero Worship,* a series of short lives of great men, gives his ideas on this subject. Another noted work is *Sartor Resartus,* or *The Tailor Resewed.* It is an account of his own

early mental experience. His essays cover a wide range of German, English, and French subjects. A number are grouped under the title of *Past and Present.* Quite in line with *Heroes and Hero Worship* is the *Life of Frederick the Great* in twelve volumes, and *Oliver Cromwell's Letters and Speeches.* A *History of the French Revolution* is one of the most vivid pieces of writing in existence.

In 1866 Carlyle was appointed lord rector of Edinburgh University, a purely honorary position, not requiring residence. He went down to Edinburgh and delivered a noble inaugural address full of power, but was prostrated in the flush of new honors by the intelligence that Mrs. Carlyle had passed away. During their lives she had been a most faithful, tactful, and, we may say, brilliant companion, who smoothed away much of his roughness, and to whom he owed no small degree of his success.

Though dyspeptic, and with a tongue that rasped like a file, Carlyle was after all tender-hearted. He spent the rest of his life in the vain regret that he had not been better to his wife while he had her. At death, in 1881, his remains were conveyed at his request to his native village of Ecclefechan.

Carlyle is not an author easily read, or easily understood. Aside from his *Essay on Burns* and *Essay on Johnson,* he is scarcely to be read at all by young people; but he is fairly entitled to the name of "The censor of the age." Few men, if any, have had greater influence on the thought of a century than he.

SAYINGS.

A dandy is a clothes-wearing man.

Silence is as deep as eternity.

Speech is as shallow as time.

Literature is the thought of thinking souls.

The greatest of faults is to be conscious of none.

One life,—a little gleam of time between two eternities.

For one man who can stand prosperity, there are one hundred that will stand adversity.

No mortal has a right to wag his tongue, much less to wag his pen, without saying something.

Genius is an immense capacity for taking trouble.

Always there is a black spot in our sunshine; it is the shadow of ourselves.

Do the duty that lies nearest thee! Thy second duty will already have become clearer.

Find out your task; stand to it: the night cometh when no man can work.

SAID OF CARLYLE:

No literary man of the nineteenth century is likely to stand out more distinct, both for flaws and genius, to the centuries which will follow. —R. H. Hutton.

Carlyle's literary style has been loudly and justly condemned. It is usually jagged and intricate, a mixture of terse English vocabulary with involved German structure of sentence. At first it seems like the belching of a volcanic mind; but after careful scrutiny it is found to be the studied expression of a mighty rhetorician who seeks not grace, but vividness; not elegance, but power.—Thomas B. Shaw.

No writer left a deeper impress on the Victorian Age.—F. V. N. Painter.

Carman, William Bliss (1861-), a Canadian poet. He was born at Fredericton, New Brunswick. His education was received at the universities of Edinburgh and Harvard. He studied both law and civil engineering. In 1886 he returned to Harvard and studied philology and English literature. He has done journalistic work on New York and Boston papers and as editor of *The Literary World.* He is the author of many poems. The best known volumes are probably the series entitled *Songs from Vagabondia, More Songs from Vagabondia,* and *Last Songs from Vagabondia.* These were produced conjointly with Richard Hovey. *Low Tide on Grand Pré, A Sea Mark, Ballads of Lost Haven, Behind the Arras,* and *A Winter Holiday* are other volumes by Carman. He is also the author of many delightful prose essays, descriptive of the homes and haunts of birds and wild game.

Over the shoulders and slopes of the dune
I saw the white daisies go down to the sea,
A host in the sunshine, a snowdrift in June,
The people God sends us to set our hearts free.

Carmel, a long range of low mountains in northern Palestine terminating at the Mediterranean in the promontory of Mount Carmel. The brook Kishon follows the northern foot to the sea. The Plain of Sharon is on the south, the Plain of Acre on the north. This is the region in which the prophet Elijah took refuge

and was fed by the ravens. Mt. Gilboa is near the eastern extremity. Mount Carmel, overlooking the Bay of Acre, was early a resort of hermits. The Carmelites, a Roman Catholic order of mendicant monks, took their rise here. See PALESTINE.

Carmen Sylva (1843-1916), the pseudonym of Elizabeth, Queen of Roumania. She was a writer of some note.

Carnac, a village on the southwestern coast of ancient Brittany. It is in the modern department of Morbihan, France. It may be reached by rail. Population, about 3,000. Carnac is famous for prehistoric remains. It was a seat of the Druids. Over 1,100 rude blocks of granite, some of them upwards of eighteen feet in height, stand on a level heath. They are arranged in rows and form avenues with a half circle at one end. The stones are thought to mark a vast Druidical open air temple and burying ground, but how people without modern tools could quarry and transport these huge stones is a marvel. The stones have the form of rough obelisks standing on the pointed end. Many of these stones were used at an early day by the surrounding farmers in the construction of stables and houses, so that the rows are far from complete. See STONEHENGE.

Carnation, a fragrant flower belonging to the pink family. Native to southern Europe. It has been cultivated more than 2,000 years. The Greeks called it dianthus or the divine flower. The name carnation refers to its original flesh color, which, under modern skill, has been broken up into white, pink, red, and every intermediate hue. Over 500 varieties are recognized by florists. Monthly carnations, plants that yield a perpetual supply of flowers for florists' purposes, were originated by a gardener of Lyons, France, about the middle of the nineteenth century. Carnations are propagated usually by cuttings. Millions of dollars are invested in hothouses and grounds devoted to raising carnations for the market. See FLORICULTURE.

Carnegie, kär'ne-gi, **Andrew,** a Scottish-American manufacturer and philanthropist. He was born at Dunfermline, Scotland, November 25, 1837. His father, a weaver in a small way, was driven out of business by steam competition in 1848 and emigrated to Alleghany City, Pennsylvania. Young Andrew entered business as a bobbin boy at twenty cents a day. Soon afterward he became a telegraph messenger boy and then a telegraph operator. His superior skill brought him to the notice of Colonel Scott, superintendent of the Pennsylvania Railway, who made him superintendent of a railway division. Mr. Carnegie laid the foundation of his fortune by borrowing money and investing it wisely in a sleeping car system. Money made in this way he again invested in oil lands, which yielded him a handsome profit.

At the outbreak of the Civil War, Colonel Scott, his old chief, became assistant secretary of war. He placed Carnegie in charge of the eastern division of military railroads and telegraph lines, a position which it is needless to say the latter filled with ability and integrity. When it became evident that wooden bridges for highways and railroads were to be replaced very generally by iron ones, Carnegie embarked in the business of building iron bridge work. From the first he saw the desirability of owning and controlling iron mines and coal mines, as well as machine shops. One step led to another naturally. By 1899 the Carnegie Steel Company controlled the iron and steel industry of Pennsylvania. In 1901 he retired from active business, exchanging his iron interests for $500,000,000 worth of United States Steel Corporation securities.

"Mr. Carnegie's withdrawal from active business was signalized by a tremendous 'stock-watering' operation. As a result, all people who use any form of iron-plate, tin or steel, have ever since been obliged to pay unduly high prices in order that the Steel Corporation may keep up dividends on this extra stock. At the same time, it is fair to say that Mr. Carnegie never followed the example of many accumulators of great wealth in defying the law and corrupting legislatures and judges."

After a busy, and, we may say, strenuous life, Carnegie found himself at liberty to carry out his own personal inclinations. He built himself a magnificent home, known as Skibo Castle, in Scotland. His winter residence was in New York. Mr. Carnegie kept open house at Skibo Castle. Many noted men visited him. Tobacco was one of his antipathies.

Carnegie was the first multi-millionaire to feel the moral obligation of the ownership of great wealth. He felt that millions acquired by employment of men as good or better than himself were not all his. His fortune was approximately $600,000,000, of which he gave away—or perhaps we might say in lieu of the above—transferred to others, $350,000,000 before his death. He left a wife and daughter to inherit the balance. The statement that it is "a disgrace to die rich" is attributed to Carnegie. That he did not succeed in avoiding such calamity is probably due to the difficulty of wisely disposing of such enormous wealth. It is not probable that the future will allow of any such aggregation of capital owing to industrial opposition and distrust. Carnegie was a "driver" and he practised in the earlier part of his career quite the contrary of methods advocated in his speeches and his books. Had he felt a proper care for the welfare of his men, at least in the earlier part of his life, the Homestead strike in 1892—a blot upon his memory—might have been avoided.

The Carnegie library plan is well-known. The community furnishes the site and maintenance; the Carnegie fund supplies the building. Gifts have been bestowed from Canada to Tasmania, costing from $5,000 to $1,000,000.

On August 11, 1919, the "Laird of Skibo" passed away. He rests in the old cemetery at Sleepy Hollow after an eventful life of eighty-four years.

The principal benefactions from the Carnegie fortune are as follows:

Carnegie Corporation (educational)	$125,000,000
Libraries (3,000)	65,000,000
Carnegie Institute, Pittsburgh	25,000,000
Carnegie foundation for advancement of teaching	15,000,000
Carnegie Research Institute, Washington	10,000,000
Carnegie peace endowment	10,000,000
Carnegie educational fund, Scotland	10,000,000
Carnegie hero fund	5,000,000
Employees pension and relief fund	4,000,000
Carnegie Music Hall	2,000,000
Allied engineering societies	2,000,000

See STEEL.

Carnegie Foundation, The, an institution for the advancement of teaching. This institution was founded by Andrew Carnegie in 1904. Its purpose is to provide pensions for retired professors. It was the original intention to confine pensions to the undenominational private colleges in the English-speaking countries of North America. The Foundation is managed by a board of trustees, and by salaried officials.

The latest annual report shows an endowment of $15,414,000. The income for the previous nine months was more than $625,000. During that period more than $450,000 was paid for retiring allowances and pensions to institutions on the associated list, and to individuals outside the list more than $85,000. There are now 336 allowances and 144 widow's pensions in force, with an average pension of $1,540. Altogether there have been 736 allowances totaling more than $5,000,000.

The rules covering the grants are simple. The institution is examined and accepted. The professors are then entitled to pensions as a "matter of right," and are not required to beg for it. Any person sixty-five years of age who has served not less than fifteen years as a professor, and who draws an active salary of $1,200 or less, may retire on a yearly pension of $1,000; but the allowance is in no case to exceed ninety per cent of the salary. For each $100 of active salary in excess of $1,200, $50 is added to the pension. Thus a professor drawing $2,000 a year, and otherwise eligible, may retire on a pension of $1,400. The maximum pension allowance is $4,000. Any person who has served twenty-five years may retire regard-

less of age, and may exchange his salary for a pension which is reckoned at four-fifths of the amount allowed the older person. A widow is entitled to half her husband's allowance. In case of remarriage the pension ceases. The trustees take special action in case of physical breakdown. Meritorious individuals not in accepted institutions may be granted pensions.

Carnegie Hero Fund, a fund established by Andrew Carnegie in 1904 for the purpose of rewarding those who perform deeds of heroism. Mr. Carnegie states that it was not his purpose to increase the number of such deeds since he believed them to be acts of impulse, but that he wished to save individuals who had displayed heroism, and their families, from pecuniary suffering as a result of injuries received in the performance of heroic acts. The fund consists of $5,000,000, and is in the hands of a commission of twenty-one members. The deed of trust guards against careless or injudicious bestowal of funds. Bronze, silver, and gold medals are given and the amount of money bestowed is governed by the extent of injury and the needs of the individual. In case no injuries have been received the gift of money depends upon the hero's needs. A child or youth is often given money in trust for educational purposes. A man or woman is relieved of debts, given money toward a home, or for the future education of young children.

According to the latest statistics the commission has awarded more than 11,000 medals of bronze, silver, or gold, and nearly $2,000,000 has been paid to heroes or their families. Pensions in force amount to nearly $80,000 annually. A large amount has been awarded as relief to sufferers from disasters. Address Carnegie Hero Fund Commission, Oliver Building, Pittsburgh, Pennsylvania.

Carnegie Institution of Washington, an organization for the encouragement of investigation, research, and discovery. It was founded by Andrew Carnegie in 1902. He gave the institution $10,000,000 to start with. Later gifts bring the total to $22,000,000. It is the intention of the institution to encourage original investigators by providing funds and facilities necessary to carry on work that ordinary institutions of learning cannot afford. The funds are handled by men of scholarship and integrity. Ex-President Charles W. Eliot of Harvard is a member of the board. In 1908 a desert botanical laboratory was maintained at Tucson, Arizona; a station for experimental evolution at Cold Spring Harbor, New York; a marine biological laboratory at Tortugas, Florida; a laboratory at Washington, D. C.; a solar observatory on Mount Wilson, California; a nutrition laboratory at Harvard. A large number of special investigators were granted salaries and were given funds to be used in connection with university departments for research, especially in history, economics, and sociology. An appropriation was made to build a non-magnetic sailing vessel for magnetic observations in the Atlantic. Luther Burbank was granted a sum sufficient to enable him to devote himself entirely to experimental work. The publications of the institute number several hundred volumes. These books are sought eagerly, both at home and abroad. Most of the institute's activities during the war were governmental and secret. Two, however, were open—the experiments regarding the physical and mental activity of a man on short rations, and the reorganization of conditions for manufacturing optical glass, the output being raised from less than one ton to more than 100 tons per month.

Carnivora, flesh-eating animals. In one sense of the word a mosquito hawk is a flesh eater, so is an eagle; but the term is restricted to mammals with small heads and sharp teeth for seizing and rending their prey. Carnivora are of two groups. The first includes the seal, walrus, seahorse, etc., which may be regarded as otters with legs changed into swimming flippers. They are very agile in the water, but are clumsy and decidedly out of their element on the land. Four-legged carnivora fitted for pursuit of their prey and for terrestrial life are divided into five families:

1. The cat family, with five retractile claws on each foot,—cat, lion, tiger, leopard, etc.

Lynx.

Spotted hyena.

2. The dog family, with five non-retractile claws on each foot,—dog, wolf, fox, jackal, etc.
3. The hyena family, long front legs and with non-retractile claws, four toes on each foot,—hyena, aardwolf, etc.
4. The weasel family, with long bodies and short legs, usually five toed,—the weasel, marten, mink, skunk, wolverin, and badger.
5. The bear family, with flatfooted (plantigrade) extremities,—the bear, raccoon, etc.

For carnivorous plants, see VENUS' FLYTRAP; PITCHER PLANT; SUNDEW; etc.

Caroline Islands, a large archipelago in the Pacific Ocean, in latitude 3°-12° N., and longitude 132°-163° E. There are in all about 500 islands in several groups. The archipelago was explored by the Portuguese in 1527, but was taken over by the Spaniards in 1686, and named for King Charles II (Latin Carolus). Spain ceded Guam to the United States and sold the rest to Germany in 1899 for $3,300,000. The Treaty of Paris in 1918 gave the islands to Japan, except the isle of Yap offered to the United States as a naval station. Many of the islets are mere coral reefs. The inhabitants, some 30,000 in number, are Polynesians not yet advanced, save for missionary efforts, beyond the stone age of savagery.

Carolingians, or **Carlovingians,** a royal house of Europe. The name is derived from the Latin word Carolus, or Charles, and may be regarded as based on Charles Martel or on his grandson, Carolus Magnus, better known as Charlemagne. There were several branches. Carolingians ruled in France 752-987; in Italy, 774-961; and in Germany, 752-911. Charlemagne was the greatest of the family. Louis, "the Child," was the last of the German Carolingians. Louis V was the last of the family to sit on the throne of France.

Carp, fresh-water fishes of the family to which the chub, goldfish, dace, sucker, red-eye, shiner, and the minnow also belong. The common carp is from ten to forty inches long, and weighs from one to four pounds. It may, in extreme cases, weigh fifty pounds. It has been kept in fish ponds for centuries in southern Europe and is still reared in the carp ponds of Germany and Great Britain. About 1872 efforts were made to establish the German carp in American waters. The streams of the Colorado and the Illinois River are full of them. About 7,000,000 pounds of carp are sold in New York City. The markets of Cincinnati, Louisville, and St. Louis are supplied with carp, sold usually, however, as buffalo fish. As compared with our native fishes, the carp is decidedly inferior. Its importation, like that of the English sparrow, has proved entirely too successful. The carp is too insipid to be prized as a table fish, and, although Walton has something to say of the skill requisite to take carp in English waters, it is too logy to be a favorite with fishermen. Carp have been known to live, it is said, upward of 150 years. See FISH.

Carpathians, kär-pā′thĭ-ans, a mountain range of Europe. The chain encircles the plains of Hungary for about 800 miles and forms a natural boundary on the northwest. The range is lower than that of the Alps, but the plants and animals are the same for corresponding altitudes. Vineyards and fields are succeeded by forests. The higher part of the ranges is above the limit of vegetation. Salt deposits of great thickness and mines of gold, silver, copper, and iron are found.

Carpenter, a worker in timber. Originally the term was connected with the making of carriages, but is now applied to one who works at the construction of wooden buildings, as houses, ships, bridges, and inside woodwork. The occupation is one that requires a true eye and hand, combined with no small degree of intelligence.

Carpenter, Frank George (1855-), an American newspaper correspondent and traveler, known to teachers and school children by his *Geographical Readers* and his industrial books—*How the World is Fed, How the World is Clothed* and *How the World is Housed.* He was born in Mansfield, Ohio, and educated at the University of Wooster, that state. He began his career as correspondent of the *Cleve-*

land Leader, and in his search for geographical knowledge, he has visited nearly every quarter of the globe. He is a recognized authority on geography.

Carpet, a woven covering for the floor or stairway. Carpets are woven usually in long strips up to a yard in width. The strips are sent to market in large rolls. Short lengths are cut off and sewed together according to the size of the floor to be covered. As distinguished from a rug, a carpet covers usually the entire floor and is fastened down by carpet tacks.

American carpets are woven by machinery. Three distinct weaves are recognized. To understand the difference it is necessary to hold in mind that the parallel threads that run lengthwise constitute the warp. The threads that run crosswise are the weft or woof. The weft and the warp woven together form a web.

The simplest weave is the ingrain carpet. It is called sometimes the Scotch carpet. Sometimes it is called a Kidderminster carpet from the English town of that name noted for carpet weaving. An ingrain may be two-ply or three-ply. A two-ply ingrain is double. It consists of two webs, let us say, a brown and a blue combined. By passing the threads up or down, the webs change sides. Wherever the blue web shows on one side, the brown web shows on the other. The figures are not unlike blisters. The blue web on one side and the brown web on the other side may be pulled apart. They are connected only around the edge of the figure. In the spaces between figures the webs may be woven together solid. A two-ply ingrain of the colors named has a blue pattern on a brown ground. Turn it over, and the pattern appears in brown on a blue ground. A three-ply ingrain is the combination of three webs—three colors. The pattern may have great variety and the body of the carpet is naturally softer and more durable. In all ingrain the surface threads lie flat. The best ingrains are made entirely of wool, though cotton and other materials are used to lessen the cost.

A second kind of carpet is the Brussels. It has a rich, corded appearance. It is built on a linen web. Worsted threads are run in and out lengthwise. These threads run over a set of crosswires. The wires are afterward pulled out, leaving a looped surface. There are usually five series of woolen threads, each of different color. The different colors rise to the surface and form the loops or lie in the body of the fabric according to the pattern. A standard five-color Brussels carpet, twenty-seven inches wide, requires 2,860 threads.

The tapestry carpet is a variation of the Brussels. Instead of five or six sets of differently colored woolen threads, the tapestry is woven, loop fashion, with one set of threads worked into the linen web. The pattern effect is secured by printing the thread in lengths, a few inches or feet of one color, then a few inches or feet of another color. Although each thread is of all colors, a single thread gives no idea of the pattern. Arranged side by side, however, elongated patterns may be seen. A pattern nine feet long in the thread is shortened to two feet in the looped and completed tapestry. The dyeing of the threads is accomplished by winding them on a drum, side by side, and printing them in color. Miles of parallel threads are wound up and stained at once.

The third important weave is the Wilton or Moquette. It differs from the Brussels in that the loops are cut before the wires are withdrawn. When laid for use, the foot presses on the loops of the Brussels carpet; but a Wilton carpet presents the ends of the cut fibers to the foot. These carpets are known also as pile carpets and velvet carpets. The Axminster is a pile carpet.

The first American carpet makers learned the art chiefly in Axminster, Kidderminster, Wilton and other British weaving centers. The British had their start from France and Belgium. The art may be traced backward to Turkey, to Persia, and to the East Indies. Aside from home-made rugs and carpets, the first American carpet was made by William Sprague at Philadelphia in 1791. It was an Axminster. Lowell, Massachusetts, became a center of carpet weaving. American manufacturers have been protected and encour-

aged by a high tariff on foreign carpets. Entire factories, finding their product barred from the American market, the best carpet market in the world, moved their looms and weavers from Scotland and England to American soil. The United States now leads the world in this manufacture. According to the last census 125 firms were engaged in carpet weaving, operating 83,000 power looms, with an annual output of approximately 100,000,000 yards, worth $50,000,000 at wholesale. Pennsylvania leads the Union in carpet weaving. In 1900 over $23,113,058 worth, or forty-eight per cent of our entire output of carpets, came from the looms of that state.

The old-fashioned rag carpets, once the housewife's pride, are distinctly American. They are still made and not infrequently in handsome patterns. The Navajo Indians, famous also for basketry, weave beautiful rugs and blankets in striking colors, which have lately attracted attention and command large prices.

See RUG; SHAWL; WEAVING; NAVAJO.

Carpet-Baggers, a term of reproach applied by the people of the Southern States to political adventurers from the North. At the close of the Civil War a swarm of Northern men, often without principle, and usually without property interests, located in the Southern States with a view to use the negro vote to secure office. These unscrupulous, moneyless officeholders were not inappropriately dubbed "carpet-baggers." Consult Thomas Nelson Page's *Red Rock,* a recent novel, for a Southern view of the case.

Carpet-sweeper, an implement for sweeping carpets and rugs. It consists of a brush set in a case equipped with wheels and a handle for operating it. The brush is so placed that when the case is pushed over the carpet, the brush is caused to revolve, gathering dust, lint, etc. into the receptacles on either side and confining it there until emptied by the operator. The carpet-sweeper will not make a carpet as clean as will a good broom, but it gathers the dust instead of scattering it, and therefore fills a place of importance in the economics of the household.

Carranza, Venustiano, a Mexican general and leader. He was born about 1860. Carranza as governor of Coahuila, refused to recognize the government of General Huerta. On March 26th, 1912, Carranza was appointed commander in chief of the Constitutionalist party. After the retirement of Huerta and the practical elimination of Villa, his government was recognized by the United States in 1915. He was overthrown and slain in 1920.

Carrara, kär-rä′rä, a town of Italy situated on a small stream of the Apennines midway from Leghorn to Genoa. It is about ten miles from the sea. It is noted chiefly for its quarries, now over 2,000 years old. Carrara marble is a pure white, fine, sugar-grained stone long celebrated in art. It is the choicest marble known. The famous sculptors of Florence, and indeed of all Europe, were wont to work at Carrara to save the expense of transporting stone. The city now maintains a school of sculpture and is a place of some culture. In addition to the pure white carrara of the sculptors, the district has unlimited cliffs of marble for building purposes. The Pantheon of Rome and many other famous buildings are of Carrara stone. Population 50,000.

Carriage, a wheeled vehicle designed to carry people on ordinary streets and roads. Two-wheeled carts or chariots were known to the Assyrian and Egyptian. It may be remembered that David brought home the Ark in a new cart, and that "the anger of the Lord was kindled against Uzzah and He smote him" for putting his unhallowed hand on the Ark when the oxen drawing the cart stumbled over rough ground. For want of roads in former times, four-wheeled carriages were comparatively rare. It is believed that beyond the rudest sort of peasants' carts, there were not a dozen carriages or coaches in all Europe when America was discovered. The bodies of the earlier carriages, were hung on straps by way of springs. The carriage spring passed through several stages. The first attempt to relieve the jar of riding was the suspension of the box by leathern straps from stiff iron arms or jacks rising in

front and behind from the axles. Then it occurred to some one to give the upper ends of the jacks a little spring. The next step was to coil the upper ends of the jacks into springs having the shape of the letter C. Elliptical steel springs have been in use about a century. The very names of the various kinds of carriages are bewildering. Gig, sulky, and go-cart; chaise, calash, cariole, coupé, hansom, and jaunting car; coach, brougham, barouche, rockaway, landau, and victoria; buggy, phaeton, and surrey; cab, hackney, fiacre, and drosky; drag, carryall, and tally-ho; wagonette, barge, stage, and omnibus; dray, express wagon, and van; cart, truck, and farm wagon,—there is no end to the classes, styles, and variations. It is impossible to say what further changes may be introduced by the automobile.

Some idea of the extent to which the manufacture of vehicles is carried in the United States may be gained from the census statistics:

Number of factories	7,632
Capital invested	$118,187,838
Wage earners	62,540
Annual wages	$29,814,911
Cost of material	$56,676,073
Wholesale value of products	$121,537,276

See WAGON; CAR; AUTOMOBILE.

Carrier, in literature, one who conveys parcels. In Dickens' *Cricket on the Hearth,* the carrier with his cart makes daily trips, executing errands and carrying parcels for a small charge. When Carlyle was at the University of Edinburgh the weekly carrier was entrusted with oatmeal, cheese, and clean linen from the Annandale home. In Great Britain and on the continent the private carrier has been superseded by the carts of the government parcel post. Scarce a rural highway is without its post wagon. The postman collects and delivers boxes, packages, parcels, and baskets, at a nominal charge—scarce a fraction of our express costs—not to mention the convenience to rural sections, such as our private express companies do not reach at all. It is thought by many that our rural free delivery postal routes may develop into a parcel post service.

In law, any individual or company that undertakes to carry for pay is called a common carrier. A common carrier, as a railroad or steamboat, must carry for all who can pay the charge, and may be held responsible for needless delay or damage to goods in transportation. The same principles apply to passenger service.

Carrier Pigeon, a bird of strong flight employed to convey messages. Before the day of the telegraph and the steam engine, carrier pigeons were much used to carry information. The whole secret lies in the fondness of the pigeon for its old home. If the Rothschilds of London, for instance, wished early intelligence of some expected event in Paris, they sent pigeons from their London loft by a messenger to their Paris house, where at the proper time a note was written on thin paper and was fastened closely around the shin of the pigeon's leg. The pigeon was then released and flew homeward to his old loft with the news still wrapped around his leg. Great pains were taken to train pigeons by taking them first on a short journey, and then farther away from home. When a carrier pigeon is released with its message, it rises in circles until it gets its bearings and then flies straight away for its home. Thirty miles an hour is an ordinary flight, although a speed of ninety miles an hour is on record. If the distance be great, the pigeon rests at night. If a pigeon be released from a balloon, it will drop like a plummet until near enough the earth to get its bearings; then it homes in a straight course. An American pigeon has been known to fly 1,040 miles without stopping.

The use of carrier pigeons reaches back into antiquity. Someone has suggested that the dove let loose from the ark was a carrier pigeon. When an Egyptian king was crowned it was customary to let carrier pigeons from the various provinces fly homeward with the announcement of the ceremony. Wealthy Romans carried pigeons in baskets into the amphitheater for the purpose of sending home the names of guests whom they were inviting, or to make a change in the dinner. The birds rarely failed in their mission.

Carrier pigeons were employed at the siege of Jerusalem. The Saracens made frequent use of this means of carrying information during the Crusades. During the Napoleonic wars, news of great battles were transmitted by carrier pigeons in advance of couriers. During the siege of Paris by the Germans in the Franco-Prussian War, the Parisians communicated with the outside world by pigeons as well as balloons. Military information was sent frequently in cipher. Since the invention of the telegraph the practical value of carrier pigeons is trifling, except in war-time activities.

In the World War very important messages were delivered by pigeons when no other means was available. Every year a pigeon "Derby" is flown from Nantes, France, to Lancashire, England. In the event of 1908 7,113 birds were taken across the English Channel. They were carried in 687 crates and required a train of fourteen railway cars. All were liberated at once. The winning bird made the trip of 450 miles from Nantes to its English home, and was cooing in the dovecote in less than eight hours.

Consul Henry D. Baker, of Hobart, makes the following report on the utilization of pigeons in Australia for carrying messages from Maatsuyker Island to the mainland:

An experiment of using homing pigeons for regular communication and emergency service between Hobart and Maatsuyker Island lighthouse, about seventy-five miles southwest of Hobart, is meeting with signal success, and was the means in November of probably saving the life of an assistant at the lighthouse, who was able, sixteen hours after sending for a doctor by pigeon post, to obtain needed medical relief.

The pigeon-post service with this lighthouse was established by the marine board of Hobart on January 21, 1908. The first message, which was dispatched from the lighthouse at 10 A. M., was received in Hobart at 1:30 P. M. Since that time three birds have been liberated with messages every three weeks, it being also understood that if accident or serious illness occurred three additional birds were to be set free. Twelve birds in all are used for the service. While messages have not always reached their destination safely, generally speaking the service has been thoroughly satisfactory. At the present time the messages are written on a piece of paper tied under the bird's wing; but the marine board has in view some celluloid cases which may be adjusted under the bird's wing and in which a good deal of information might be written upon "flimsies." The birds are fed on gray peas of good quality, given plenty of grit and fresh water, and kept thoroughly clean. They are also allowed at their station plenty of opportunity for needful exercise. Maatsuyker Island lighthouse is very isolated. It is situated seventy-five miles in a direct line from Hobart, and by steamer ninety miles. That this lighthouse was able to secure a doctor from Hobart sixteen hours after one had been sent for by pigeon post suggests important possibilities for more general use of pigeons for such service. There are 20,000 of these birds in the Commonwealth.

See PIGEON.

Carroll, Lewis, the pen name of Charles Lutwidge Dodgson. See DODGSON.

Carrot, a well known vegetable. The original plant grows wild in Europe and northern Asia, but the root is small and tough. It was cultivated at an early date in Belgium and in France. It is related to the parsnip. The seed stalks are arranged like the rays of an umbrella, as is the case with all plants of the umbelliferous family. The carrot of one year raises seed the next year. The seeds are valuable for medicinal purposes. The spindle-shaped root is rich in nitrogen and is valued for the table and for cattle. Sheep are fond of carrots. Over 2,000,000 bushels a year are raised in the United States. Oil of carrot, obtained from the root, is used in tanning leather. The carrot was brought to Virginia in 1609 and carrot seed was sown at Plymouth in 1621. The Indians of New England and New York obtained seeds from the white people. A cross section of a carrot shows an outer ring and a central core. As the ring tastes better and is more valuable for food, plant breeders are trying to produce a variety that shall have a small core or even none at all. See VEGETABLES.

Carson, Christopher (1808-1868), known usually as "Kit" Carson, a celebrated American trapper, guide, and soldier. He was born in Madison County, Kentucky, December 24, 1808. He died at Fort Lynn, Colorado, May 23, 1868. When a lad he was set to learn the saddler's trade, but forsook it for a hunting expedition. He served Frémont as a

guide. In 1847 he was sent to Washington with dispatches, and received an appointment as an American scout. In 1853 he drove a flock of 6,500 sheep overland to California. He served for a time as an Indian agent in New Mexico. During the Civil War he served in the army and was made a brigadier-general. Carson City, Nevada, was named for him. See FRÉMONT.

Carson City, the capital of Nevada, sixteen miles from Lake Tahoe. It is situated at the base of the Sierra Nevada mountains near celebrated mineral hot springs. Mining, lumbering, and agriculture are the chief industries. The famous Comstock Lode is but eighteen miles away. There are railroad and machine shops in the town. The state capitol building and a U. S. mint are located here. The state prison is two miles distant, and a government school for Indians is three miles south of the city. The population in 1920 was about 2,500.

Cart, a two-wheeled vehicle drawn by a single animal. The cart is one of the most primitive of vehicles. The farm cart is a clumsy affair without springs. The box may be opened at the rear, and is so balanced on a rude hinge that by unhooking the front end it may be tipped backward to dump the contents. This form of a cart has been long in use for the conveyance of wood, manure, and for other farm work. A cart has never been considered a dignified conveyance. In London, criminals were conveyed in a cart to Tyburn for execution. Minor offenders were tied by the hands to the cart's tail and flogged through the public streets. Whittier, it may be remembered, speaks of

> Old Floyd Ireson for his hard heart
> Tarred and feathered and carried in a cart
> By the women of Marblehead.

Of late, however, the term has been applied as well to a stylish, light, runabout vehicle with springs, intermediate between the chaise and the sulky. See CAB; CARRIAGE.

Carte Blanche, cärt-blänsh′, literally a white card; hence a blank paper, and then an official document duly signed, but left to be filled out at the discretion of the officer or person to whom it is intrusted. The term is now used to designate full authority to act. In 1832, for instance, a memorable contest was on between the House of Commons and the House of Lords. The Tory lords refused twice to pass a reasonable house bill designed to extend suffrage to small householders and to reapportion representation in Parliament. The prime minister struggled with King William to secure the appointment of enough new lords to carry the bill through the upper house. Finally, the minister wrote on a scrap of paper which the king signed, "The king grants permission to Earl Gray . . . to create such a number of new peers as will ensure the passage of the Reform Bill." This bit of paper, now preserved in the British Museum, conferred authority which it was not necessary to use. The Tory lords stayed away when the bill was next put upon its passage, and it became a law. Disraeli wrote, "Lord Grey was armed with *carte blanche.*"

Carthage, kär′thĭj, a famous Phoenician colony on the coast of North Africa. According to tradition it was founded by Queen Dido, who fled from Tyre with her followers. She bought as much land of the Africans as might be covered by an ox hide. In selecting the land the hide was cut into a thong, and as much territory was claimed as could be surrounded by the hide. While without foundation the tradition typifies the dealings of Carthage with its neighbors. The date of its founding is given commonly as 878 B. C. Tyre and Carthage appear to have been allies.

Carthage appeared on the scene as one of the great Mediterranean powers about 600 B. C. While Greece was grappling with the Persian invasions, Carthage seized what seemed a favorable opportunity to attack the Greek colonies in Sicily and southern Italy. Though unsuccessful, the attempt showed an early ambition to be supreme in the Mediterranean world. Carthage had the finest harbor in North Africa, only 100 miles distant from the island of Sicily. The city was governed by a council, or senate, of 100 rich mer-

chants. Its army was drawn from the Carthaginian provinces,—from Africa, war elephants, black Libyans armed with pikes, and Numidians, who rode fleet horses, like the Cossacks of today. They were dressed in the skins of lions, and were armed with lances and bows. Bands of Iberians with sharp-bladed swords were brought from Spain, and companies of half-naked Gauls were hired to fight with great two-handed swords. From the Balearic Isles they drew companies of slingers, who threw pebbles or balls of lead.

The Carthaginians claimed exclusive control of the western Mediterranean, and ships went as far as the British Isles for tin. If the inhabitants of a Mediterranean town permitted a ship from any other country to touch for trade they were punished. If a foreign ship was overtaken, its rowers were pitched into the sea and the ship confiscated. The Carthaginian merchants sent to Tyre for cargoes of oriental productions brought by a caravan from the far East. Silver they obtained from the mines of Spain and Sardinia. They had oil and wheat to sell from vast African estates, worked by slaves or subject people. Their own workmen made jewelry, arms, and idols for the trade.

Carthage was a proud, powerful, wealthy city until it came into conflict with Rome. Two such cities as Rome and Carthage could not exist as neighbors. A deadly grapple followed, lasting 215 years. Carthage had the most powerful navy in the world, with more money and more men than Rome. Three wars followed in quick succession. They are called the Punic Wars, a shortened term for Phoenician. The First Punic War lasted from 364 to 341 B. C. At its beginning the Carthaginians declared, "Without our permission, Rome cannot even wash her hands in the sea." Rome, however, built up a navy and, after suffering several defeats, finally vanquished the Carthaginians and laid waste Carthaginian territory in Africa. As the result of this war, Carthaginian supremacy on the Mediterranean was lost. Sicily, Sardinia, and Corsica passed into the hands of the Romans. One scheme by which the Romans gained a great advantage was the invention of a platform hinged at one end to the Roman ship, something like the drawbridge of a castle. Upon approaching a Carthaginian ship this drawbridge, filled with armed men standing behind their shields, was lowered until the outer end rested on a Carthaginian deck, affording the Roman soldiers an opportunity to attack at a great advantage.

The Second Punic War was precipitated by the Carthaginians who invaded Italy with a large army by way of Spain, France, and the north. Hannibal was in command. He very nearly brought Rome to the verge of ruin, but failed to capture the largest cities. The Romans under Scipio carried the war into Africa, and Hannibal was summoned home with his army to defend Carthage. The result of this war was a complete defeat for Carthage. It became, in a way, subject to Rome.

The Romans, however, did not feel safe. Cato, the senator, returned from an embassy to Carthage, and exhibited some enormous fresh figs that he had brought back with him, and declared that they were produced but three days' journey from Rome. He dwelt at length upon the danger of permitting so powerful an enemy to exist, and closed his speech with the words, repeated upon every possible occasion: "Carthage must be destroyed." With such a sentiment an opportunity soon came. It matters not what the excuse may have been, Carthage was besieged; walls were built across the entrances to the harbors to prevent ships from bringing in food; ditches were filled up; movable towers and battering rams brought into use. The inhabitants were half starved, yet defended themselves valiantly; women cut off their hair to make ropes for the war engines used to hurl stones, but Carthage was doomed. Military operations began 149 B. C. In the spring of 146 B. C. the city was taken in an assault lasting seven days. The inhabitants were put to the sword or sold into slavery. The city was set on fire; the stone walls were torn down, and the very ground plowed up, sprinkled with

salt, and cursed. The Carthaginian territories were made a Roman province with the capital at Utica. Two hundred years later the Romans rebuilt Carthage. It was taken by the Vandals and retaken by Belisarius. The remains of an enormous aqueduct with which he brought water from the far distant mountains may still be seen. In the early centuries Carthage was a center of Christianity, but in 697 the city was destroyed by the Arabs. It is now but a shapeless ruin, with scarcely a name.

See HANNIBAL; FABIUS; PHOENICIA.

Cartier, kär-tyā′, **Jacques** (1494-1557?), a French navigator. His first voyage to the New World was made in 1534, when he discovered the St. Lawrence river. He reached Newfoundland, discovered the straits of Belle Isle, and, landing on the mainland of Canada, took possession of it in the name of his sovereign, Francis I. The next year he sailed up the St. Lawrence river to the site of Montreal. There he found an Indian village to which he gave the name of Mont Royal. In 1541 he undertook a third expedition, intending to found a settlement. He did build a fort near the site of Quebec, naming it Charlesbourg, but it was soon abandoned. The exact date of Cartier's death is unknown.

Cartoon, a sketch or drawing on strong paper or cardboard to be used as a model for large pictures in frescoes, tapestry, mosaics, etc. The cartoon is the full size intended for the permanent picture and the design thus sketched may be transferred to the surface to be painted, or it may be copied. Cartoons, if by some famous artist, may themselves be of value after they have served as models. Nine of the twenty-five original cartoons painted by Raphael for the Vatican tapestries are still in existence, and are preserved at the South Kensington Museum, London. The term cartoon has come to be used to designate a picture or sketch of simple outline, intended to ridicule some well-known person, institution, habit, or condition. See CARICATURE; NAST.

Cartridge, a ready-made charge for a gun. In early days, powder, a wad, a bullet or shot, and a second wad were rammed home from the muzzle in succession. In the earlier cartridges for muzzle loading the lead occupied one end of a paper cylinder, the powder the other. The soldier inserted the cartridge between his teeth, tore a hole in the powder end, poured the powder into the gun, and then rammed lead and paper after it. Modern cartridges for breech-loaders are furnished with metal and pasteboard shells. A fulminating cap is placed in the metal shell, so that, on being struck by the hammer, a spark discharges the powder. Shells are recapped and reloaded. They are described in accordance with the amount and kind of powder, the amount and size of the lead, and the caliber or diameter of the cylinder. See RIFLE; AMMUNITION; GUNPOWDER; SEPOY.

Cartwright, kärt′rīt, **Peter** (1785-1872), a famous circuit preacher. He was a native of Virginia. He died at Pleasant Plains, Illinois. In 1806 he was ordained by the Methodist church of Kentucky. He was a famous outdoor revivalist, a power in the camp meetings for which pioneer Kentucky and Illinois were noted. He was a man of ready wit, earnest eloquence, and sound common sense, but withal somewhat eccentric. On one occasion, it is related, he came down from the pulpit and threshed a rowdy who was disturbing the meeting. He then went back to the pulpit and finished his discourse. His rough and ready ways gave him a strong hold on the settlers. He sat in the legislature of Illinois. In 1846 Abraham Lincoln defeated him in an election for Congressman. In his *Autobiography* he tells us that he traveled sixty-five years, baptized over 12,000 persons, and preached over 15,000 sermons.

Caruso, ka roo′zo, **Enrico** (1873-), an Italian operatic singer, the most famous tenor of his day, was born in Naples. At the age of 11 he began to sing in churches and at 23 he began his operatic career. His success was assured from the first, and he sang repeatedly in the leading European cities before coming to America in 1904 to fill an engagement with the Metropolitan Opera Company in New York. His success was phenomenal, and he has visited this country professionally nearly every

year since. Caruso's success is due to a voice of remarkable power, sweetness and range.

Carver, John (1576-1621), the first governor of Plymouth colony, the first permanent English colony in New England. He was born in England, but sought refuge with other Puritans at Leyden. He sailed in the Mayflower for the New World and was elected governor before a landing was made. His rule was wise, just and firm, but very short, for he died four months after his arrival. See PLYMOUTH COLONY.

Carver, Jonathan (1732-1780), an American explorer. He was a native of Stillwater, New York, and died in London. In 1756 he commanded a company of colonial rangers in the invasion of Canada. On the conclusion of peace he obtained a halfway commission to explore the vast territory lying west of the Great Lakes. In 1766 he set out from Boston. He traveled by way of Mackinaw and struck westward to the Mississippi at Prairie du Chien. He visited the Falls of St. Anthony, bargained with the natives, it is said, for a grant of land where St. Paul now stands, and explored the northern border of Lake Superior. In 1768 he returned to Boston and soon set sail for England to lay his charts and reports before the authorities, by whom he hoped to be recompensed for his outlay. In this he was disappointed. The lords commissioners required his charts, but gave him no money. In 1778, while earning a living as a clerk, he managed to bring out an edition at Boston of his *Travels Through the Interior Parts of North America.* It is an interesting account of the country and the manners, customs, ceremonies, dress, languages, and mode of living of of the Indians he had seen.

Carving, a branch of sculpture from which it is distinguished by the use of soft material, as ivory and wood. A walkingstick with a carved ivory head was an indispensable part of the equipment of a Babylonian gentleman. The Greeks employed carved ivory in the construction of their statues and colossal gods. The remains of early Christian art, whether in ivory or wood, are richly carved. The finest specimens of woodcarving, however, are to be found in the altar work, pews, doors, chairs, tables, and halls of the medieval churches, and in the homes of the merchant princes. Ravenna, Prague, Nuremberg, Augsburg, Antwerp, Bruges, and, generally speaking, the cathedral towns and the cities of the Hanseatic League have richly carved woodwork. Oak carvings are a feature of the stairways, halls, and pews and altar work of old English houses and churches. Westminster Abbey possesses some fine carvings, both medieval and modern. Germany has ever excelled in this branch of art. The Black Forest region still maintains its reputation for carved work of artistic merit, as well as for toys, parlor and hall ornaments, and for clock work. The establishment of manual training schools bids fair to create a revival of interest in wood work of this sort. See SCULPTURE.

Cary, kā′rĭ, **Alice and Phoebe,** American poets. They were the children of a plain farmer near Cincinnati. Alice was born April 26, 1820; Phoebe, September 4, 1824. They were educated in the district school. Alice was tender and sad; Phoebe, witty and joyous. Their mother died while they were young. They did the housework together and began writing poetry and articles for such magazines as would accept their contributions. Whittier gave them much encouragement. In 1849 a volume of their poems was published. The next year Alice went to New York to live, and sent for Phoebe a few months later. Money began to come in from their writings. Soon they were able to move into a pretty little house where the literary people of the city, including Horace Greeley, a staunch friend, were quite in the habit of dropping in for an evening, or at a weekly reception. Both sisters died in 1871, Alice first, and were buried in Greenwood Cemetery, Brooklyn. In life and in death the sisters were inseparable; their poems are published together in a single volume. Instead of trying to tell the good they did, and instead of giving the names of their chief poems, we take the space for a quotation from each, and a quotation from a poem

by Whittier written on the occasion of Alice's death:

With hand on the spade, and heart in the sky,
Dress the ground and till it;
Turn in the little seed, brown and dry,
Turn out the golden millet.
Work, and your house shall be duly fed;
Work, and rest shall be won;
I hold that a man had better be dead
Than alive, when his work is done.
—Alice Cary, *Work.*

One sweetly solemn thought
Comes to me o'er and o'er;
I am nearer home today
Than I ever have been before;
Nearer my Father's house,
Where the many mansions be;
Nearer the great white throne,
Nearer the crystal sea;
Nearer the bound of life,
Where we lay our burdens down;
Nearer leaving the cross,
Nearer gaining the crown!
—Phoebe Cary, *Nearer Home.*

Unseen of her, her fair fame grew,
The good she did she rarely knew;
Unguessed of her in life, the love
That rained its tears her grave above.
—Whittier, *The Singer.*

Caryatid, kăr-ĭ-ăt′ĭd, a figure of a woman in long robes taking the place of a column in architecture. The Greek plural, the Caryatides, is the name of a remarkable series of six marble figures of this sort employed to uphold the roof of the porch of a temple adjoining the Parthenon in Athens. Just what motive the Greeks had in employing female figures is not known. It has been suggested that they represent slaves taken in war; but the grace and dignity of these sculptured forms precludes the thought of their being introduced as a mark of subjection or slavery. They are about seven feet in height. The originals still stand, and form one of the most beautiful portions of the remarkable ruins on the Acropolis. The use of caryatides was not uncommon in Greece and Rome. Male figures used for the same purpose were called atlantes.

Casabianca, kä-sä-be-än′kä, **Louis,** a French naval officer. He was captain of the flagship L'Orient in the battle of the Nile, August 1, 1798. He was mortally wounded and his ship caught fire, but his little nine year old son would not leave the ship without a permission that his dying father could not give. The ship exploded and both were lost. Mrs. Hemans has celebrated the bravery and obedience of the little fellow in a well known poem beginning,

The boy stood on the burning deck
Whence all but him had fled.

Cascade Mountains, a range of western mountains. The Cascades run parallel to the Pacific coast from California northward into Alaska. In British Columbia and Alaska the Cascades crowd the Coast Range off into the sea. The line of elevation is marked by a number of mountains of volcanic origin. Wrangel, St. Elias, Logan, Fairweather, Vancouver, Shasta, Tacoma or Rainier, Adams, and Hood are the most noted peaks. The range is cut by river gorges, notably by that of the Columbia. The Great Northern Railway crosses the summit in Washington by means of the Cascade Tunnel. This tunnel is wide enough for a double track and is twenty-one feet six inches high. It is faced with concrete and is 2.6 miles long.

Cash, a foreigner's name for the copper coin of China. These coins are thinner and smaller than our cent and are provided with a large square hole in the center by means of which they are tied up in bunches like beads on a string. A single cash is worth rather less than a tenth of a cent. The small value of the coin is in keeping with prevalent wages and with the small parcels in which articles of food are sold at retail in China. See Coin.

Cashew, kă-shōō′, a small, spreading, tropical tree. It is native to the West Indies. The cashew is an excellent example of a tropical plant put to many uses of which people in a north temperate climate have little knowledge, and in which they cannot be expected to take a special interest. The cashew nut is a kidney-shaped bean an inch in length. It has a pleasant, oily taste, and is used as an article of food, either raw or roasted. A sweet oil, pressed from the kernels, is used like olive oil for cooking. The fruit stalk, corresponding to the stem of a cherry, is swollen and fleshy like a pear in shape, and

is eaten as a cashew apple. A kind of wine is made from its juice. The roasted nuts are used to flavor cocoa in the manufacture of chocolate. The acrid vapor which escapes in roasting is likely to cause erysipelas. A gum similar to gum arabic exudes from the bark of the tree.

Cashmere, the northernmost principality of India. It lies directly west of the Himalaya Mountains, and includes the upper windings of the Indus River. The Vale of Cashmere, which gives its name to the province, is a beautiful valley celebrated in oriental literature, but better known in modern times as the home of the goat from whose wool, or hair, the famous Cashmere shawl is made. The whole principality has a population of 3,000,000. The Vale of Cashmere has an area of 4,000 square miles. It is surrounded by beautiful scenery and snow-capped peaks, whose splendor and sublimity are said to be beyond description. The valley is about 5,000 feet above the sea. It is well watered, and is blessed with an abundance, which, together with its natural beauty, makes it the "Paradise of India." Forests, fields, and rice plantations, rich orchards and vineyards, mulberry trees raised for the production of silkworms, violets, roses, and jasmines are abundant on every hand. About one-third of the inhabitants are Hindus; the rest are Mohammedans. The province is not, however, very prosperous. Its few manufactures, especially that of the Cashmere shawl, are declining. The towns are dirty and the inhabitants unprogressive. Some improvements, it is asserted, have been introduced by the British government. A railway has been extended into the province from the south. Improved methods of agriculture are also in process of introduction.

Cashmere, a variety of light weight, fine twilled, woolen dress goods. It is dyed in plain colors. It is soft and fine, and of pleasing appearance. A fine wool material made from the wool of the Cashmere goat was imported into England in 1820. The cashmere known at the present time is one of the many imitations of this cloth, which, in turn, was an imitation of the plain portions of the famous Cashmere shawls. The chief peculiarity in the weaving of cashmere is that it is made of a "single" warp. This means that the yarn forming the warp is composed of one fine, single thread instead of two or more threads twisted together as one. In order to stand the strain put upon it, this "single" thread of cashmere must be of the best raw material, tightly twisted. It is run through a solution called sizing, which adds strength, just as a string might be made stronger by dipping it in mucilage or varnish. Cashmere is made up usually "in the gray" or natural color. It is held in stock, and is dyed only to fill orders and in such colors as happen to be fashionable. A cheaper grade of cashmere is made with cotton warp, but it is less durable, and the colors are less permanent. A well made cashmere is one of the most serviceable dress materials ever manufactured. Its beauty lies in the evenness of the weave, and its soft draping qualities. It may be washed as easily as cotton.

Cashmere Goat, a variety of the common goat found in the mountainous regions of Tibet and the Indian principality of Cashmere. Its natural food consists of twigs, buds, and heather. The farther up the mountains, the finer and softer the wool, and the deeper its color. The latter varies from an ochre, well up the mountains, to pure white, far down in the valleys. A thick body of fine, curly wool lies next the skin, beneath long outside hairs. A full grown goat yields about one-half pound of fine wool. It is worth from $9 to $12 a pound. The wool of from six to ten goats is required for a Cashmere shawl, according to its weight. Genuine Cashmere shawls made from the wool of the Cashmere goat in the Vale of Cashmere are rare. In America genuine Cashmeres are worth from $70 to $1,500. The hair is spun and dyed by women. The shawls are woven on rude hand looms, but are fine, and involve such intricate patterns that the time of two or three weavers is required for a year to produce a single shawl. A careful investigation would show that these shawls are woven in strips which are sewed together with great skill. Several thousand hand looms are in opera-

tion; but a large amount of wool is imported from other districts, so that a large part of the actual output of the Vale of Cashmere is far from genuine. See RUG; SHAWL.

Cashmere Shawl, a fine woolen shawl made originally in India. The genuine shawl was for centuries one of the most costly and highly prized articles of commerce. Three thousand dollars has been paid for a single shawl, although it is claimed that few, if any, of the best specimens leave India. These shawls are made from the fine, downy wool found about the roots of the hair of the wild goats of Tibet and the Himalayas. They have been made, it is believed, for 4,000 years. The down is separated from the coarse wool, and is spun by hand. The fiber is so short that spinning is a work of difficulty. The weaving is done in a rude hand loom; three or four men sometimes working for a year to produce one shawl. This tedious process, and the fact that the Cashmere goat has not been reared successfully outside of Tibet, account for the costliness of these shawls. They are made in several styles. Some are wholly of one piece and are dyed in a solid color. Others are made of small strips or squares set together with marvelous skill. Either style may be embroidered. Cashmere shawls have been imitated in many places. The most famous imitations are the Broché (brō-shā′) shawls of France and the Paisley shawls of Scotland. Cashmere shawls have been called erroneously camel's hair shawls, from the popular belief that they were made of camel's hair. The plain Cashmere shawls are called chudders or chuddahs in Europe and America. See CASHMERE; CASHMERE GOAT; SHAWL.

Caspian Sea, the largest lake in the world, not fresh water. It lies on the borderland between Europe and Asia. Its greatest length from north to south is 730 miles; its greatest width, 270 miles; its area, about 170,000 square miles, nearly twice that of the American Great Lakes combined. The surface is 85 feet below that of the ocean. The water is less salt than that of the ocean, but is yellow in color, and exceedingly bitter. It is, of course, without an outlet, but has a number of tributaries, including the Volga, the largest river in Europe. Rapid evaporation prevents the water from rising. There are valuable fisheries, including those of carp, perch, trout, and especially sturgeon. Porpoises, seals, and tortoises are taken on the northern coast. A fleet of fishing and merchant ships finds shelter in the various harbors. Baku, at the western end, is celebrated for petroleum oil; Astrakhan, on the Volga near its mouth, is the principal Caspian port. Portions of the sea are very deep, possibly over 3,000 feet, but numerous shallows prevent the employment of vessels having draft to exceed ten feet. See ASIA; VOLGA; BAKU.

Cass, Lewis (1782-1866), an American statesman. He was born at Exeter, New Hampshire. He entered the practice of law in Zanesville, Ohio. He became a brigadier-general in the War of 1812, and was at the battle of the Thames. In 1831 he was appointed governor of Michigan territory, then extending to the headwaters of the Mississippi River. In this position he showed no little ability in handling the Indian questions of the Northwest. Subsequently he published a volume entitled *Inquiries Concerning the Indians.* A magnificent body of water in northern Minnesota is known as Cass Lake. General Cass was appointed secretary of war under Jackson, and in 1836 was sent as minister plenipotentiary to Paris. Later he became senator from Michigan and was secretary of state in Buchanan's cabinet. In 1848 he ran for the presidency, but was defeated by General Taylor. An echo of the campaign may still be heard in the *Bigelow Papers.*

Gineral C.' is a dreffle smart man;
He's ben on all sides that give places or pelf;
But consistency still wuz a part of his plan,
He's ben true to one party,—an' thet is himself;
So John P
Robinson he
Sez he shall vote fer Gineral C.

Gineral C. he goes in fer the war;
He don't vally principle more'n an old cud;
Wut did God make us raytional creeturs fer,
But glory an' gunpowder, plunder an' blood?
So John P.
Robinson he
Sez he shall vote fer Gineral C.

Cassan'dra, in Greek legend the fairest princess of Troy. She was the daughter of Priam and Hecuba, consequently the sister of Hector and of Paris, whose theft of Grecian Helen brought the war upon the Trojan city. According to one legend, Cassandra and her twin sister were left overnight on a couch of laurel in the temple of Apollo. In the morning the sisters were found with two serpents licking their ears. As a consequence, Cassandra was gifted with such acuteness of ear that she could hear the conversation of the gods, and was able to prophesy. She foretold the fall of Troy and protested frantically against the admission of the wooden horse within its walls; but Apollo, whose advances she had repulsed, was angry and caused her protests to be made in vain. At the fall of the city, she fled to the temple of Minerva, but was torn away and abused by Ajax. She was taken to Greece as one of the slaves of Agamemnon, and was put to death by his wife, Clytemnestra. Cassandra was a favorite subject with ancient poets and sculptors. Modern writers also have found material in her story. She appears in Shakespeare's *Troilus and Cressida.* In Schiller's poem, *Cassandra,* the prophetess is represented as bewailing her fate in not being believed.

And men my prophet wail deride!
The solemn sorrow dies in scorn;
And lonely in the waste, I hide
The tortured heart that would forewarn.
Amid the happy, unregarded,
Mock'd by their fearful joy, I trod;
Oh, dark to me the lot awarded,
Thou evil Pythian God!

Thine oracle, in vain to be,
Oh, wherefore am I thus consigned,
With eyes that every truth must see,
Lone in the city of the blind?
Cursed with the anguish of a power
To view the fates I may not thrall
The hovering tempest still must lower,
The horror must befall!

Those who foresee and predict the downfall, meet the fate of Cassandra.—*The Times.*

Cassava, kăs'să-vă. See TAPIOCA.

Cassia, kăsh'ă. See SENNA.

Cassimere, kăs'sĭ-mēr, a general term employed to designate a large class of woolen fabrics used for men's clothing. They are woven plain, twilled, and in a variety of fancy effects. The yarns are spun from wool prepared by the carding process. The patterns are produced in the loom and are usually plaids, checks, and stripes in quiet colors. The quality of cassimere differs greatly. It is made sometimes with a cotton warp and wool or shoddy weft. This is called union cassimere. It has been estimated that fully one-half of the men's ready-made clothing produced in the United States is of cassimere.

Cassiopeia, kăs-ĭ-ō-pē'ya, in Grecian mythology, an Ethiopean queen, wife of Cepheus and mother of Andromeda. Cassiopeia was so proud of her daughter's beauty that she boasted that it surpassed that of the Nereids or sea-nymphs. The incensed nymphs begged Poseidon for vengeance. In response to their prayer a deluge laid waste the dominions of Cepheus, and a fearful monster appeared on the coast to still further ravage the country. Cepheus, inquiring of the oracle, learned that only the sacrifice of the beautiful Andromeda would appease the wrath of the ocean dwellers. Andromeda, therefore, was chained to a rock on the seacoast to be devoured by the monster. While awaiting her horrible fate, she was seen by Perseus, flying homeward with Hermes' winged shoes, and carrying Medusa's head. Perseus dropped to earth, learned the troubles of Andromeda, slew the monster, and married the maiden. For a time the sea nymphs ceased to harass Cassiopeia. At her death, however, she was given a place among the stars, which angered them anew. Their only recourse was to cause her position in the heavens to be such that in revolving about the pole star, she should hang head downward half the time. This, perhaps, to teach her humility. The constellation Cassiopeia is known as the Lady in her Chair. In charts of the constellations she is represented as a draped figure reclining in a chair and holding up both arms. There are fifty-five stars in the constellation, five of which, forming a capital W, are of the third magnitude. A new star appeared in the constellation in 1572. For a time it

shone as brightly as Venus, then disappeared, and has not been identified since.

> That starred Ethiope Queen that strove
> To set her beauty's praise above
> The sea-nymphs, and their powers offended.
> —Milton.

Cassiquiari, kăs-sē-kē-ä′rē, a unique river of Venezuela. It branches off from the upper Orinoco, taking nearly half of the water of that stream, and flows westerly over 100 miles into the Rio Negro, one of the main tributaries of the Amazon. The Cassiquiari is a deep, rapid, navigable stream. With the Rio Negro it forms a continuous waterway between the Amazon and the Orinoco. See AMAZON; ORINOCO.

Cassock, the tight-fitting coat worn under the gown or surplice by clergymen. In the Catholic church the cassock of the priest is black; that of the bishop is purple; of the cardinal, scarlet; and of the pope, white. The name was applied formerly to a loose, outer gown worn over other garments.

Cassowary, a genus of large birds resembling the emu and the ostrich. There are several species, found chiefly in New Guinea, Australia, and intermediate islands. The common helmeted cassowary stands five feet high. It has a crested head and a bare, wattled neck of a deep blue and fiery red color, set off by a large, yellow eye an inch in diameter. The body is draped with soft, dark, hairy plumes from three to fourteen inches long. The wings are short, almost abortive, but are armed with five stiff quills with which it can strike a dangerous blow. The body and legs are stout. A strong foot is divided into three toes each armed with a stout claw, the largest, that of the inner toe, being three and one-half inches in length. The cassowary runs with swift bounds, far outstripping a horse, but, unlike the ostrich, it receives no aid from its reduced wings. It lives in the forests and parks on fruits, seeds, and the eggs of other birds. Its own eggs are green. Those of the largest species are from three to five inches in diameter. They are left in a nest on the ground to hatch, it is said, in the heat of the sun. The birds may be tamed or domesticated. See OSTRICH; EMU.

Cast, a term applied by artists to an impression taken by means of wax or plaster of Paris, of a coin, bust, statue, face, or any other model. Powdered plaster of Paris is mixed into a paste, spread on the surface of the model, and suffered to harden to form a mold. It is then removed, dried thoroughly, and hardened with linseed oil. It may be made in two or more sections, the edges of which should be fitted carefully together. The mold is then filled with plaster of Paris which reproduces the features of the original model. In case of a living face, the eyebrows and hair are first anointed with sweet oil to prevent adhering, and pasteboard tubes are inserted in the nostrils to allow the model to breathe. Plaster casts may be hardened with soap, white wax, rosin, and linseed oil until they resemble marble in appearance and are able to withstand washing to remove dust and grime. See SCULPTURE; CASTING; BELL.

Castanets, a pair of wooden rattles. The name is derived from *castania,* the Latin name for chestnut, from the wood of which castanets are not infrequently made. Castanets are shaped not unlike the two halves of an oyster shell, only they are shallower, and more nearly circular. They are tied together loosely by a string and hung over the thumb, so that they fall within the palm of the hand. When the hand is shaken the castanets strike against the half closed fingers making a tremulous sound. They are played as an accompaniment to the guitar or to mark the time of dancers. It is supposed that their use was introduced by the Moors. They are still in favor among the peasants of Portugal, Spain, and southwestern France. More out of curiosity they have been introduced into English-speaking countries for concerts and the like.

Caste. See BRAHMANS; INDIA.

Castelar, Emilio (1832-1899), a Spanish statesman. A native of Cadiz. He studied at the University of Madrid and became a professor of history in that institution. He was a frequent contributor to various periodicals. At the age of thirty-two he established *La Democracia,* a popular journal devoted, as may be infer-

red from the name, to the advance of democratic ideas. The period was one of military uprisings, of "government by revolt." Ferdinand VII, a suspicious, treacherous, absolute monarch, died in 1833. The Absolute party desired to crown Carlos, a brother of the dead king. The Carlists, as this party was called, were opposed by those in favor of a constitution. The crown was settled on Isabella, a young daughter of Ferdinand, under the regency of her mother, Christina, who proclaimed a paper constitution. Carlos and the Carlist leaders were driven out in 1840; but meanwhile the Constitutionists divided into Moderates and Progressionists and fell to blows. Christina sided with the Moderate party and was forced to abdicate. One military uprising followed another. Any officer who had the troops and a grievance might issue a proclamation and find himself in flight or in charge of the young queen's government, as the event might turn out. These revolutions were little more than armed changes of ministry. There was noise and bluster, but little bloodshed. The common people went on planting and harvesting, reaping their little patches of grain, pulling the flax and hemp, gathering oranges and hazelnuts, pressing wine, and shearing sheep, quite indifferent to the cockade that rode foremost, provided they could pay their taxes and keep bread in the mouths of their children. Forty years of this kind of government went on. Isabella grew up worthless; elections were a farce. As a journalist and public speaker, Castelar strove manfully to bring order out of chaos. His is the one patriotic voice to be heard above the din of selfish strife.

In 1866 Castelar was concerned in an uprising, not against the ministry, but against monarchy, and was compelled to flee to England under sentence of death. Two years later Isabella fled, and Castelar returned. Castelar labored to proclaim a republic, but the supporters of monarchy won in the Cortes and finally the crown was accepted in 1871 by Amadeo, a younger son of Victor Emmanuel of Italy. Two years later the young king gave up in despair, and Castelar became the president of a new republic. The constitution was much like that in vogue elsewhere. Castile, Aragon, and the other ancient provinces were constituted states; but the people proved unfit for self government. It had been the dream of Castelar, the student, and Castelar, the writer, and Castelar, the speaker, and Castelar, the revolutionist, and Castelar, the legislator, to give Spain an enlightened democratic government; but Castelar, the president, could not convert the ignorance of centuries into intelligence, nor the official selfishness and dishonesty of misrule for generations into a progressive and upright administration. He encountered an empty treasury, a demoralized army, officers in mutiny, seaboard cities refusing to comply with national legislation, Carlist uprisings in the north and municipal uprisings in the south, hordes of ruffians in the cities, and bands of bandits in the mountains.

Castelar was forced to abandon theory for practical measures. He saw that "the choice lay between bayonet rule in the hands of disciplined troops controlled by good men, and pike rule in the hands of a vicious rabble led by escaped galley-slaves." During a recess of the Cortes, Castelar made himself dictator. He drove out the Carlists, subdued the cities, and sent criminals to the gallows by the short route of drumhead courts-martial. When the Cortes reassembled, a resolution of censure was passed. Castelar might have turned the legislators out at the point of the bayonet, but he had no personal desire for authority. He resigned promptly. He became a member of the Cortes, rising often from his seat to speak with all his old time eloquence. Castelar is admittedly the Spaniard of his century. His chief writings are *History of the Republican Movement in Europe, Civilization,* and *Questions, Political and Social.*

Castelar was well aware that he had not seen all his hopes bear fruit but he was well content. Toward the close of his life he wrote: "When we turn the eyes of our memory to the sad realities of the past, and compare them with the realities of the present, we see what may be accomplished without the fulfillment of

Utopian dreams and unrealizable ideals. Those who have seen an almost absolute monarchy may today see a democratic monarchy. Those who once scarcely dared to express their thoughts, today may write whatever they think proper. Those who once were excluded from the universities for proclaiming free thought and the proper standards of science, today have a right to teach what they think and believe. Those who once felt their hearts stirred with indignation against slavery and the markets where human beings were bought and sold, as in Nineveh and Babylon, now know that today there is not one slave under the Spanish flag. We may well feel content with the work of the past forty years."

Castile, käs-tēl′, a former kingdom in the central part of Spain. For a long time it was a frontier state,—a line of castles, as the name implies, against the Moors. By the marriage of its queen, Isabella, with Ferdinand, king of Aragon, in 1469, the crowns of Castile and Aragon were united. From this union sprang the modern kingdom of Spain. See MOORS; SPAIN; ARAGON.

Casting, the running of melted metal in a mold so as to produce a piece of metal having a desired shape. Casting is to be distinguished from stamping. Coins, for instance, are struck out of a sheet of metal by a heavy punch, and pressed into form by a die. Casting is done for the most part in foundries. Small castings may be made in trays of sand; but for castings of size a bed of sand, often many feet deep, is spread over the floor of the casting room. Casting sand is fine, free from gravel, and has a faculty of retaining an impression as of a footprint. It must be dried out thoroughly to prevent an explosion through the sudden formation of steam when hot metal is poured into it.

In order to make a casting it is necessary, first of all, to have a pattern, usually of wood, the exact size and shape of the desired object, from which to form a mold. In case of a pattern of plain form, it is thrust simply into the sand bed. The sand is rammed to make it fit up closely and stand firm. The pattern is pulled out and molten metal is poured in from a ladle. In case of a large casting the metal is allowed to run through a gutter from the melting pot to the mold. As soon as the iron begins to harden it is covered with sand so that the cooling may proceed slowly.

A more complex pattern like that for the castings of a school desk, for instance, could not be drawn out without disturbing the sand. For such castings a mold is made by means of two frames called flasks. The first frame is laid on a table, filled level full of casting sand rammed tightly; the pattern is then laid flat on the sand and pressed down till half its thickness is pressed into the surface. An empty frame is then set on the first frame and sand filled in and rammed down as before. A small hole is made through the upper sand reaching to the pattern. The upper frame is then lifted off, bringing its sand with it. The pattern is taken out and the upper frame is set back carefully. If all has gone well, a cavity or mold the exact shape of the pattern has been formed between the sand of the upper and lower flasks. The molten metal is now poured into the cavity through the hole provided for the purpose, and is allowed to cool. The two flasks are then separated and the casting is removed.

Castings may vary in weight from a fraction of an ounce to many tons. A huge iron casting lately turned out in a Pittsburg foundry measured $26 \times 8 \times 12$ feet and weighed 234,000 pounds—117 tons. In case of a hollow casting, such as a kettle or an iron pipe, an inside mold called a core, and an outside mold or jacket, must be made that the iron may be poured in between them. Some notion of the method of producing such a mold may be gained from the article on the BELL.

See CAST; SCULPTURE; IRON; STEEL.

Castle, a strongly fortified residence, such as was occupied by the nobility of the Middle Ages. Castles were a prominent feature of feudalism, and, as such, were built throughout western Europe. It is considered probable that they grew out of the old Roman camp, or defence thrown up for the temporary protection of the

legions; but the castle differed essentially from the camp in that it was a place of residence, as well as a stronghold. The Normans brought the art of castle building to its greatest perfection. One reason why William the Conqueror subdued England so readily was a lack of English fortresses built on the Norman plan.

Castles were, of course, of various sizes and shapes. The smaller were large enough merely for the accommodation of a family, a few domestics, and a handful of men. The more pretentious castles of the war lords were provided with storehouses, stables, and barracks for the accommodation of a small army of men and horses, and were provisioned to withstand a long siege.

Inasmuch as any stone stronghold was called a castle, it is difficult to give a description that applies to all. Castles were perched, if possible, on some rocky eminence,—a river bank, or at least a bit of rising ground. The entire works were surrounded by a deep moat or ditch. The moat was filled with water in time of danger. The site of the castle was chosen often with a view to filling the moat from a nearby stream or lake. The castle of Loch Leven, Scotland, was built on a small island. In case the site was a peninsula, it was necesary to construct a moat across the isthmus only.

Around the inner edge of the moat a high wall of masonry was constructed. Speaking of the Norman castles built in England, this wall was eight or ten feet thick, and from twenty to thirty feet high. The top was wide enough for two or three men to walk abreast. A stone parapet or battlement ran around the outer edge to protect the defenders. Sometimes it overhung, so that stones and molten lead could be dropped on besiegers who undertook to undermine the walls below. It was provided usually with embrasures or gaps, through which arrows, darts, and stones might be discharged upon the besiegers. The lower edge of the embrasure was ordinarily breast high. There were also narrow portholes behind which archers might stand in security. Projecting towers were built at the corners. The moat was crossed by means of a wooden drawbridge, hinged at its inner end. Chains wound on a windlass in the tower enabled the keeper of the drawbridge to pull up the outer end until the platform stood erect, thus making it necessary for besiegers to plunge through the moat in order to reach the castle walls.

The gateway was fortified with great care. There was usually an outbuilding, called a barbican, which must be taken by besiegers before they could reach the gate proper. The roadway was flanked by massive stone towers, united overhead in an arch. In addition to strong folding doors studded with metal, the passage was defended by a portcullis, a heavy frame sliding in grooves in the stonework on either side of the gateway. It was raised by means of a windlass, and could be let drop at a moment's notice. The defenders of a castle sometimes resorted to the dangerous experiment of raising the portcullis and allowing as many besiegers to enter as could be handled safely; then dropping it again. Within this outer wall was an open court, known as the outer bailey. A second wall constructed like the first, only thicker and higher, and pierced by a gateway similarly defended, separated the outer bailey from a second court, known as the inner bailey.

Within the inner bailey stood the keep, a massive four-story stronghold with enormous towers and battlemented walls. The keep of the Tower of London, begun by William the Conqueror, is 100 feet square and four stories high. Its walls are fifteen feet in thickness. The keep of Rochester Castle, also four stories in height, is surmounted by lofty turrets running a story higher. The keep was entered by a single doorway, so small that a few men could repel the attacks of many. The basement, known as the dungeon, or donjon, was used for the confinement of captives. It was without light or ventilation. The first floor of the keep was occupied by soldiers' apartments and a guard room, mess room, etc. It was lighted by very small, narrow windows, easily defended. The second and third floors were provided with larger windows. The state chambers, including the

great dining hall, were situated usually on the second floor; the private apartments of the family and private chapel were on the upper or fourth floor.

In order to take a castle of this type, therefore, it was necessary to pass the moat, gain the barbican and outer doorway, storm the second wall, and lastly to gain possession of the keep, the strongest building of all. Not infrequently the entrance to the latter turned at right angles, or wound upward in a spiral, rendering it easy of defense. Sometimes the floors were built of thick stonework, so that the defenders could retire from story to story, making their last stand on the upper floor. For the want of gunpowder or other explosives with which to blow up stonework, the taking of a strong castle was practically an impossibility. Unless betrayed by treachery, or starved out, a garrison could make good the defense for an indefinite length of time. In addition to wells for the ordinary use of the garrison, keeps of this description were provided sometimes with a central well, surrounded by strong walls, so that water might be drawn only from the upper story. In fact, the keep was the essential part of a castle. Many castles of no little strength had no outer defenses. Sometimes the chapel, barracks, residence portion, and keep formed part of the outer walls.

A sort of glamor surrounds castle life. In reality, however, a castle was a comfortless place of abode. The thickness of the walls prevented the entrance of much light. The interior was gloomy, dark, damp, and poorly ventilated. The inhabitants were subject to neuralgia and many diseases which sanitary precautions now render infrequent. The furniture of the nobility was of the rudest description. The soldiers slept usually in their clothing on straw. Despite gay pennons, uniforms, brilliant trappings, and martial music, the interior of the castle was oftentimes as squalid as the lodge of a typical Indian. It is only in contrast with the wretched huts of the village, usually found at the foot of the castle hill, that the castle itself can be accounted a desirable place of residence. Things often seem better by contrast.

As stated, castles in various states of preservation are to be seen all over Europe. Ruined castles may be seen by the score from almost any railway train. A locality without its ivy-covered castle walls is lacking, indeed, in historical associations. The Danube and the Rhine, especially the banks of the latter, are noted for magnificent castles. Special articles may be found on WARWICK, KENILWORTH, TOWER OF LONDON, WINDSOR, EDINBURGH and DUMBARTON. Sir Walter Scott has made much of the castle. "Norham's castled steep" and "Tantallon's towers bold" are described in the first, fifth, and sixth cantos of *Marmion*. A description of Front-de-Boeuf's smaller castle may be gleaned from chapters xxi-xxx of *Ivanhoe*.

See FEUDALISM.

Castor and Pollux, in Greek and Roman mythology, twin sons of Leda, wife of Tyndareus, and Zeus, who was said to have wooed Leda in the form of a swan. In Homer they are represented as sons of Leda and Tyndareus and brothers of Clytemnestra and the beautiful Helen of Troy.

Castor was famous for his skill in taming and managing horses; Pollux for knowledge of boxing and wrestling. The brothers were devotedly attached to each other and were inseparable companions in many adventures. They were among the heroes of the Argonautic expedition. On the voyage a terrible storm arose. While all were calling on the gods for assistance, two stars suddenly appeared above the heads of Castor and Pollux. The storm immediately subsided and thereafter the twin brothers were regarded as the special guardians of seamen. On their return from this expedition the brothers found that their sister Helen had been carried off by Theseus. They went to her rescue and were successful in bringing her home again.

According to another account Pollux only was the son of Zeus. He was therefore immortal; but Castor, the son of Tyndareus, was mortal. The brothers became involved in a quarrel with Idas and Lynceus. Castor was slain, and Pollux, inconsolable, besought Jupiter to allow him to die too, unless Castor might share his

immortality. Zeus consented that the two might divide their time between the lower world and the abodes of the gods.

Still another story is that Zeus rewarded their fraternal affection by giving them a place among the stars. The two bright stars in the constellation Gemini, or "The Twins," are known as Castor and Pollux.

The brothers received divine honors, especially among the Dorians. They were called Dioscuri, Sons of Jove. It was believed that in time of battle or great peril they occasionally appeared to mortals mounted on magnificent white steeds, clad in shining garments, and with stars above their heads. It is thus they are represented in ancient art.

The electric flames sometimes seen to play about the masts of vessels during storms are often called Castor and Pollux. If only one flame appeared, the Romans called it Helen, and prophesied a continuation of the storm. If two flames were seen they were called Castor and Pollux, and boded a cessation of the storm. These lights are also called St. Elmo's fire. See ST. ELMO'S FIRE.

The names Castor and Pollux are of frequent occurrence in literature. In Acts xxviii: 11, we find St. Paul embarking in a ship named Castor and Pollux.

But when the sons of Leda shed
Their star-lamps on our vessel's head,
The storm-winds cease, the troubled spray
Falls from the rocks, clouds flee away,
And on the bosom of the deep
In peace the angry billows sleep.—Horace.

So like they were, no mortal
  Might one from other know;
White as snow their armor was,
  Their steeds were white as snow.
Never on earthly anvil
  Did such rare armor gleam,
And never did such gallant steeds
  Drink of an earthly stream.
. . . . . .
Back comes the chief in triumph
  Who in the hour of fight
Hath seen the great Twin Brethren
  In harness on his right.
Safe comes the ship to haven
  Through billows and through gales,
If once the great Twin Brethren
  Sit shining on the sails.—Macaulay.

Castor Bean, or castor oil plant, a handsome, stately plant, a native of southern Asia or northern Africa. In tropical countries it becomes a woody plant reaching a height of thirty feet, but in north temperate countries the bean is planted from seed in May, reaches a height of from three to fifteen feet during the summer, and wilts at the first suggestion of frost. The castor bean is a plant of remarkable growth. In 1907 Oscar Smith of Great Bend, Kansas, grew a plant 180 inches high in 150 days. The total breadth of the plant was 196 inches; the largest leaf measured 36 inches in diameter. The plant bore 347 leaves 6 inches or more in width. Quick growth, colored stems, broad purple leaves from six to thirty inches in diameter, and long racemes of yellowish flowers, make the castor bean a showy, desirable plant for decorative purposes, especially in the center of a mass of foliage plants in a park or other extensive grounds; but it is too large and coarse to commend itself to florists. The fruit is a burr-like pod containing three oval seeds, or beans, from which the castor oil of commerce is obtained. Castor oil plants are raised for commercial purposes in India, France, Spain, Brazil, the West Indies, and the United States. Illinois and Missouri raise seed enough to make St. Louis quite a center of oil production. The best quality of oil is obtained by crushing the seeds cold. It has a light yellow color. It is a thick, smooth oil, almost as heavy as water. In addition to its use as medicine, castor oil is considered the best of oil for sewing machines, lawn mowers, buggies, and all machinery for which it is not too expensive. It is also suitable as a dressing for fine leather, and is recommended for expensive shoes, carriage tops, and costly harness. See MEDICINE; OIL.

Cat, a family of animals including the lion, tiger, panther, lynx, and wildcat. Of all domestic animals the common house cat retains the greatest number of wild characteristics. It has never been tamed completely. It cannot be subdued by punishment, and, although attached to the fireside, it pines and dies in captivity. It seems to be very like some wild ancestor, and yet its origin is unknown. Domesti-

Nubian cat.

Wildcat of Old World.

Angora cat.

CATS.

cated animals are usually larger than their wild relatives; but the domestic cat is smaller than any known wild cat. Cats differ so that it is thought probable that they represent more than one forest cat of Europe and Asia, perhaps now extinct.

The cat is preëminently a hunter. It has a large, broad head, and a comparatively slender body, able to follow wherever the head can go. It has long whiskers or feelers on the sides of its face, calculated to assist its noiseless passage amid bushes or other obstructions. The pupil of the eye of the cat contracting or expanding in a marked degree adapts itself to varying degrees of light. That is why the cat can see as well at night as by day. The tongue is provided with rough, tooth-like projections that slant backward, giving it a rasping surface. The cat has five long, sharp claws on the front foot, and four on the rear. Each claw is hung on a peculiar joint, and is controlled by a pair of muscles. The under muscles draw the claws into position for striking and holding prey; while the upper muscles draw the claws upward and backward into little pockets in the ends of the toes, so that their owners can step softly on the ball-like projections of the foot. The cat has a remarkably lithe, powerful body, endowed with great endurance, giving rise to the proverbial expression that "a cat has nine lives."

Unlike the mink, the otter, and many other flesh-eating animals, the entire cat family shuns water. The fur is devoid of oil, and is, in consequence, naturally free from disagreeable odors. The cat is an exceedingly affectionate mother, and has a very amusing way of carrying her young about by the nape of the neck. The kittens are exceedingly frolicsome, giving rise to a Scotch proverb often offered mothers who are worrying about their wayward children, "A wanton kitten aye makes a douce cat."

Cats are usually classified as long-haired and short-haired, the former including the Siamese, Persian, and Abyssinian cats. The tabby cat, a term somewhat misunderstood, is applied to any cat having a light ground color with darker stripes, bars, or spots. Thus a yellow cat with orange red markings, or a gray cat with black markings, is a tabby. The term is derived from the name of a watered silk, which in turn had its name from the street of Atab in Bagdad, noted for its silk manufactures.

The service of the cat to the agriculturist is hardly appreciated at its full value. Although long recognized as a famous mouser and inveterate foe of rats, few realize that, without the assistance of the cat, it would be exceedingly difficult to raise or store food in the grain producing countries. Rats and mice, to say nothing of squirrels, multiply with such rapidity that they would devour not only grain in the fields but the grain in mills and elevators. We are sometimes provoked with the cat for disturbing the nests of innocent birds; but this offense is far more than offset by its service in protecting the food supply of mankind.

The Egyptians, who lived in what was called the "granary of the world," are said to have recognized the value of the cat at an early date. At all events the cat was carefully protected and even reverenced. Temples were erected in its honor. The members of the household shaved off their eyebrows as a sign of mourning when the cat died, and its mummied remains are found along with those of princes and priests.

It is said that the cat is wholly selfish in its actions, without affection for the members of the household. However that may be, the cat has long been a favorite companion, holding first place among pets. Robinson Crusoe, it will be remembered, was exceedingly attached to a cat. On the other hand, during the New England witchcraft craze, cats were considered the familiars of witches. Satan was supposed to communicate with his dupes by taking the form of a black cat.

The term cat has been applied variously. The cattail is a tall, aquatic herb, with sword-like leaves and a central stem, terminating in a cylinder of fuzzy seeds, something like a cat's tail. The cat-o'-nine-tails is a cruel whip of nine lashes, formerly used on British men-of-war. A cat-and-dog affair is a state of permanent

hostility on a small scale, like that existing between the cat and dog. It is difficult to say just how the expression, "it rains cats and dogs," originated. To "let the cat out of the bag" is to divulge a secret, while, "a cat may look at a king," is expressive of the fundamental equality of man.

See LION; TIGER; COUGAR; LYNX.

Catacombs, kăt′ă-kōms, subterranean burial vaults. The custom of depositing the dead in cavern-like passages excavated in rock appears to be widespread. Catacombs have been found in Phoenicia, Asia Minor, on the coasts of Africa and Cyprus and Syria, Persia, Upper Egypt, Sicily, and elsewhere. Even the Aztecs of Central America deposited bodies, perhaps to the extent of millions, in rocky caverns which they enlarged and extended for the purpose. Abraham, it may be remembered, bargained with the children of Heth for the cave of Macpelah in which to bury his dead.

The most extensive catacombs known are those excavated by the early Christians in the tufa or volcanic rock underlying the Campagna, or plain, near the city of Rome. The Romans cremated, but the Christians adopted the Jewish mode of burial. These catacombs were made by the early Christians as a place of burial, but came also to be used for refuge. Chapels and places for holding public worship were excavated in connection with them. The total length of the passages is from 350 to 900 miles. It is thought that they contain the bones of over 6,000,000 people. Many chambers, or vaults, are arranged along the sides of the passages. Those of important families appear to have been marked with slabs of stone bearing suitable inscriptions.

Extensive catacombs are also found near Naples, and underground at Cairo. In excavating the stone of which the principal buildings of Paris are constructed the quarrymen extended their works to great distances beneath the surface of the city, leaving pillars to uphold the roof. When it became desirable to use the church cemeteries within the city for other purposes, the bones were collected and deposited in these old quarries, and they became places of burial. It is said that the catacombs of Paris contain several times as many people as now dwell within the city. Visitors accompany the officials on their periodical visits of inspection. The air of the catacombs is pure and dry. They are guarded carefully by the police to prevent their becoming the haunts of criminals. Guides carrying wax tapers conduct the party downward to a distance of seventy feet. There are many objects of special interest, including an underground chapel, memorial tablets, and a museum of curiosities. Some of the passages are hung with ghastly festoons of skulls and thigh bones. However desirous the visitor may be to visit these silent realms of death, he is thankful to reach the outer world again.

Catalpa, kă-tăl′pă, a genus of deciduous trees, found in the northern hemisphere and belonging to the trumpet-creeper family. There are seven or eight species, four of which are hardy in temperate regions. The species best known in the United States flourishes from New England southward. A second species, the showy catalpa, is native from southern Illinois and Indiana to the Gulf. It is cultivated as a park tree as far north as central Minnesota. In southern latitudes it grows to be a tree 100 feet in height. The leaves are broad and heart-shaped at the base. The flowers are tubular, bell-shaped, and two-lipped, with a total spread of about two inches. They are showy and are succeeded by long ornamental pods that hang on during the winter time. The wood is soft and close grained, but it is as durable as that of the walnut and chestnut. Catalpa fence posts are known to have lasted eighty-five years. The wood is light and is worked easily. It does not check in drying. The Indians of the Ohio Valley are said to have preferred a catalpa log to all others for canoe making. Experts in forestry recommend catalpa planting for wood lots. A thrifty young tree is large enough for a fence post at the age of fifteen years, and large enough for a railroad tie at twenty. Several railroad companies are said to be setting out catalpas for ties. The catalpa may be propagated by seeds and by cuttings.

Catamaran', a sort of raft. The original catamaran is an invention of the natives of Madras, Ceylon, and other Indian coasts. It consists of three logs lying side by side. The central log is longer and much larger than the two others, and is pointed at the ends. Holes are bored through the logs and all three are stoutly lashed to crosspieces. The logs chosen are light and full of pitch, which prevents their becoming watersoaked. The raft is from twenty to twenty-five or thirty feet long, and perhaps one-fifth as wide. A sail is not infrequently rigged up. The natives use the catamaran as a surf boat. As it cannot tip over or hold water it rides like a duck when other boats would fill and sink. Passengers who do not fear a drenching are conveyed safely to shore or ship through surf that would swamp a boat. The catamaran of American lakes is constructed usually on slender, oblong, water-tight boxes instead of logs. Like any other raft it affords no protection against drenching, but is considered a safe sort of craft for boys who enjoy the water. See BOAT.

Catapult, a Roman engine of war. Although we use the expressive phrase, "shot from a catapult," we have no exact description at hand. Makers of cuts have conjectured that a powerful bow was drawn by winding up a windlass and let go by slipping some sort of a catch. By this means bolts or arrows were hurled with great force. Large catapults requiring the strength of several men were used in besieging walled cities. This before the invention of cannon. They were capable of throwing a six-foot sixty-pound wooden bolt, to a distance of 400 yards. Small catapults were carried by single soldiers. On the whole the catapult seems to have been built on the principle of a bow and arrow.

Cataract. See YOSEMITE; NIAGARA; VICTORIA; WATERPOWER.

Cataract, a disease of the eye, in which the crystalline lens gradually becomes opaque, resulting in partial or total blindness. The name is said to have come from the belief of the ancients that a veil or film fell down inside the eye, cutting off the sight. A dimming in vision and a change in color of the pupil, usually to white, marks its onset. No medical treatment avails, but skilled surgeons may remove the lens so that with proper spectacles sight is partially restored. Cataract is fortunately painless and is unusual except in elderly people.

Catarrh, kà-tär', in medicine, an inflammation of the mucous membrane that lines the air passages of the head and throat. The membrane throws off an offensive discharge of matter freely. Catarrh differs from diphtheria in that the surface of the membrane is not destroyed, nor does it become covered with patches of false growth. Like bleeding, catarrh is not a disease; but it is a symptom of some general cause—some general disorder of the mucous membrane. It arises frequently from a severe cold. Inflammation of the mucous membrane of the stomach or other tubular organs may also occur, and is also termed catarrh. See DISEASE.

Catawba, kà-taw'bà, in horticulture, an excellent variety of cultivated grapes. This grape originated from the fox grape of the Catawba River in the Carolinas, from which locality it takes its name. The Catawba grape was brought to perfection by Mr. Longworth in a vineyard on the hills of Cincinnati. It is of a red, coppery color. In size it is midway between a Concord and a Delaware. The growers of the Ohio Valley are partial to this grape, which they send to the market in five and ten pound baskets. It is considered an excellent wine grape. See GRAPES; MUTATION.

Catbird, a well known slaty-gray bird with black crown and tail. About nine inches in length. It is related to the wren, the brown thrasher, and the mocking bird, the latter of which it resembles not a little. It ranges from Hudson Bay to the Gulf, nesting in dense thickets and closely foliaged trees. Three to five eggs, greenish blue. The catbird is intensely distressed when her nest is discovered. Mrs. Olive Thorne Miller gives the catbird a high reputation for hospitality and charitable behavior toward its unfortunate neighbors,

feeding the hungry and distressed like a good Samaritan; but Lowell speaks of catbirds as "weasel Scots," that from their home in a syringa bush, tore down the unguarded nests of their neighbors. The catbird is a fine singer, performing late into the night; but it demands prompt payment in raspberries and other small fruits in sufficient quantities for self and fledglings. See MOCKING BIRD.

Catechism, kăt'e-kĭzm, a pamphlet or volume of religious instruction put in the form of question and answer. The Roman Catholic catechism was put forth in Latin by the Council of Trent in 1556. It has been translated into various modern languages. The first English translation appeared in 1829. The *Westminster Shorter Catechism,* drawn up by a meeting of Presbyterian divines at Westminster in 1647, is taught by the Church of Scotland and Presbyterians generally. It was long taught by the Congregationalists of New England. An abridgment is the *Shorter Catechism,* embalmed in literature as far from a delight to children. The catechism written by Martin Luther is taught in Lutheran parochial schools the world over. The catechism of the Church of England has been a manual of instruction for centuries. Other denominations, notably the Methodists and Baptists, have each a catechism. The Protestant dissenters of England were attached to Dr. Watts' catechism.

Catechu. See ACACIA.

Caterpillar. See INSECTS.

Catfish, a family of marine and freshwater fishes including 900 species. As a family they are sluggish, feeding generally in the mud of streams. Some of them are good for food, and all are tenacious of life, living out of water or in the mud of dried up ponds for an astonishing length of time. The body is without scales. The mouth is usually surrounded by feelers. The first ray of the forward fins is extended into a sharp spine which inflicts painful wounds. Of North American species, we have two sea catfishes of a dusky bluish color along seashores from New York to Texas. The three-foot channel-fish, olivaceous in color, with silvery sides and a large eye, is an excellent food fish. It is found in streams from Vermont to Montana and southward to the Gulf. The steely blue Mississippi cat is larger and stouter than the preceding, reaching a weight of 100 pounds. The best known catfish is the common bullhead or horned pout, found in muddy bottoms of ponds and streams everywhere. It can make a living after all other fish, even the pickerel, have been destroyed. It is a nuisance to the angler for perch, wall-eye, or bass. Thoreau has noted its ways well.

The horned-pout is a dull and blundering fellow, fond of the mud. It bites deliberately as if about its business. They are taken at night with a mass of worms strung on a thread, which catches in their teeth, sometimes three or four, with an eel, at one pull. They are extremely tenacious of life, opening and shutting their mouths for half an hour after their heads have been cut off. A bloodthirsty and bullying race of rangers, inhabiting the fertile river bottoms, with ever a lance in rest, and ready to do battle with their nearest neighbor.—*A Week.*

Catbird (see preceding page.)

Catgut, a sort of string prepared from the intestines of sheep and other animals,

never those of a cat. The *Century Dictionary* suggests that the word may have been kitgut, "kit" meaning a violin, and that the change to catgut may have come about from a careless confusion of kit and cat. The intestines are cleansed very thoroughly, steeped in water, and all fatty matters removed. The external membrane is scraped away with a dull blade, and the clean gut is then drawn through a perforation or twisted into shape and dried. The best gut is prepared in Milan and Naples. The poorer the animal, the less fat to be removed from the intestines, the better the string. Catgut is exceedingly tough, flexible, and durable. Catgut is used extensively for the strings of violins, harps, and other stringed instruments. It is used also by clockmakers for weight cords in high grade clocks. In 1868 Dr. Lister, a professor of surgery in Glasgow, the same from whom listerine takes its name, discovered a new use for catgut. Prior to this time surgeons used silk thread to tie arteries. They depended on the final decay of the silk and its absorption by the system. Sometimes the silk rotted too soon, that is, before the artery had fully united, in which case the artery broke open and required to be retied; and, in any case, the rotting silk formed an objectionable spot of foreign matter; Dr. Lister used catgut instead. He found that a bit of properly sterilized catgut tied about a cut in an artery turns into artery wall. See SURGERY.

Catharine I (1684-1727), empress of Russia. She was the daughter of a Roman Catholic peasant, and became the Lutheran wife of a Swedish dragoon. When Marienburg was stormed in 1702 she fell into the hands of one and then another Russian officer; finally becoming the mistress, then the wife, and lastly, in 1724, such was her influence, the empress of Peter the Great. In 1711 she rendered her husband signal service in a war with the Turks. He was on the brink of destruction when she obtained an influence over the grand vizier, bribed his servants with her jewelry, and secured better terms for Peter than he had any reason to expect. Prince Menshikoff, whom she met before Peter saw her, stood her friend, and on Peter's death had her proclaimed empress and autocrat of all the Russias. Catharine was an unprincipled, profligate adventuress, but she did much for Peter and much for Russia. She died, it is said, in a tipsy debauch. She could neither read nor write.

Catharine II (1729-1796), empress of Russia. She was a severely educated German princess selected for the wife of Peter III, to whom she was wedded in 1745. He proved a weak, dissolute prince, unfaithful to his wife. The Orloff family shut him up in prison and proclaimed Catharine autocrat in 1762. Peter died soon after under suspicious circumstances —strangled by the Orloffs, it was said. Catharine was doubtless an unprincipled, licentious woman, but she ruled for over thirty years with an ability second only to that of Peter the Great. The latter declared that the Baltic and the Black Sea were the eyes through which Russia must look out upon the world. Peter secured the Baltic eye and Catharine led the Turks a rough life until she had secured the Black Sea eye. She formed an alliance with Frederick the Great. She was a party to the division of Poland, and obtained quite a section of Polish territory. By correspondence with Voltaire and other eminent men she won a reputation as a friend of literature. Aside from extending the bounds of Russia, Catharine saw that roads were built, canals dug, towns founded, commerce extended and protected. Under more liberal laws farmers were protected in the enjoyment of their crops and business prospered. More would have been accomplished had not the French Revolution broken out. It gave Catharine and her friends an idea that education and privileges make people dissatisfied—a notion still too prevalent among the Russian aristocracy. Thomas Carlyle called Catharine a female Louis XIV. See POLAND; KOSCIUSKO; PETER THE GREAT; FREDERICK THE GREAT.

Catharine of Aragon (1485-1536), queen of England and wife of Henry VIII. She was the youngest daughter of the Ferdinand and Isabella of Spain in whose reign Columbus discovered America.

In 1501 she married Arthur, son of the king of England. On the death of this prince, the king, desiring, it is said, to retain her money, caused her to marry his second son, who afterward became Henry VIII. of England. The Pope granted a dispensation, as required for wedding a husband's brother, and Catharine and Henry ascended the throne of England together in 1509. See HENRY VIII; ANNE BOLEYN; MARY I.

Catharine de Medici (1519-1589), queen of France. She was a daughter of Lorenzo de Medici of Florence and a niece of Pope Clement VII. In 1533 she married Henry, son of Francis I of France. She came of a family noted for ability and intrigue, and is considered one of the worst of the family. She, more than any other, involved the Protestants and Catholics of France in destructive factional warfare. She was a Catholic, of course, but appears to have been quite ready to betray friend or foe, as might seem to advance her own interests. She is responsible for the terrible massacre of St. Bartholomew, perpetrated in the reign of her son, Charles IX. In spite of her reputation for political intrigue, Catharine was a woman of elegant manners and refined tastes, a patron of literature, sculpture, and painting. See COLIGNI; HUGUENOTS.

Cathedral, the chief church of the diocese, the church in which the bishop has his chair or seat. From the fact that the bishop's church is likely to be a wealthy church, we have become accustomed to expect a grand building. As a matter of fact, a cathedral may be a lonely hut in a remote missionary field. Moreover, the bishop's cathedra or chair may be removed from one church to another, or from one town to another, just as a king may change his capital. So far as this article goes, it may be regarded merely as a description of the important and dignified church buildings for which western Christianity has been noted.

The early cathedral differed little from the oblong, rectangular Roman basilica or hall of justice. The famous Cathedral of Worms is considered an excellent example of a church half way between the early basilica and the later styles. One of the earliest and the most significant changes was the alteration of the ground plan by giving it the form of a cross, symbolical of the Christian religion. This was effected by building a second rectangle or transept across the first.

The ground plan of a typical cathedral has, first of all, the shape of a cross. The parts may be of varying length and width, but the cross is the controlling idea. The Cathedral of St. Mark at Venice is nearly square. Others have a long nave and short transepts, but the cross is still the predominant feature. At the head of the cross is the choir. It projected eastward not only toward the rising sun, but, in western Europe, toward the sepulcher of Christ. This gave rise to the terms east, west, north, and south as used by architects. The west portal is opposite the choir, and the north and south transepts are on the left hand and on the right hand respectively, as one walks through the nave from the west portal toward the choir. The roof of the nave was usually much higher than the aisles, giving opportunity for a clerestory and windows, and creating the impression of vast spaciousness. Galleries ran around the nave above the aisles, increasing the seating capacity of the edifice. In many churches, at least, the north aisle was set apart for men and the south for women.

In the old basilica the nave was sometimes left uncovered, but the Christians put on a roof. Towers were built to carry chimes of bells, and spires were added, pointing heavenward. The round arch of the Romans grew into the high arch of the Normans, and the latter into the pointed arch. From an architectural point of view, the most celebrated cathedrals are of the pointed style, known popularly as Gothic. The French, English, and Germans,—the Roman Catholics everywhere,—excelled in the construction of these churches.

The earlier cathedrals were decorated in paint and stucco. Christ wearing his crown of thorns, or bearing his cross, was a central thought. Favorite symbols were the lamb, emblematical of Christ; the dove, symbol of the Holy Ghost and of

mildness and gentleness; the heart, symbol of Christian longing; the peacock, bird of immortality; the phoenix, sign of the resurrection; the olive leaf, used as the sign of peace; the palm leaf as the reward of martyrdom; and the anchor and lyre as emblems of Christian confidence and joy. The Old Testament was drawn upon for scenes illustrative of the Bible story of Adam and Eve, Cain, Abel, and Abraham, Noah and the ark, Daniel in the den of lions, and Jonah swallowed by a whale.

Later the carver executed wonders in wood, and later still the sculptor's art created decorations in stone. The older cathedrals, with solid round arches and painted wall decorations, have an air of solidity and repose. The great pointed cathedral is instinct with life and yearning and aspiration. Though built of stone, from foundation to the topmost point of spire and pinnacle, it rises into the air with energetic lightness and the grace of frost work. The spires, rib-like walls, flying buttresses, sculptured portals, pillars, forest-like aisles, galleries, stained glass, rich altars, and intense reverent atmosphere of a pointed cathedral produce an effect that is not approached by any other form of architecture.

The most celebrated American cathedrals are those of Baltimore, New York, Mexico, and Montreal. The Protestant Episcopal diocese of New York is erecting an edifice designed to be the most ambitious structure of the sort in the New World. It is to cost $10,000,000 and to be fourth in size among the world's sanctuaries. The general style is Romanesque. It depends for effect on a large vaulted and domed central area rather than on long pillared vistas.

The Gothic church plainly originated in a rude adaptation of the forest trees with all their boughs to a festal or solemn arcade, as the bands about the cleft pillars still indicate the green withes that tied them. No one can walk in a road cut through pine woods, without being struck with the architectural appearance of the grove, especially in winter, when the barrenness of all other trees shows the low arch of the Saxons. In the woods in a winter afternoon one will see as readily the origin of the stained glass window, with which the Gothic cathedrals are adorned, in the colors of the western sky seen through the bare and crossing branches of the forest.—Emerson.

Catherwood, Mary Hartwell (1847-1902), an American novelist. She was born in Luray, Ohio, and died in Chicago. Her education was received at the Granville Female College. The romantic side of American history has furnished material for most of Mrs. Catherwood's novels. Although not her earliest novel, *The Romance of Dollard* was the first to bring fame to its writer. Other volumes worthy of mention are *The White Islander, The Days of Jeanne D'Arc, Old Kaskaskia, The Lady of Fort St. John,* and *Lazare.*

Cath'ode Rays, a phenomenon resulting from an electrical discharge within a vacuum tube from which all but about one millionth of the air has been removed. The platinum wire by which the electricity enters the tube is called the anode, and where it leaves, the cathode. It is from the latter that these peculiar rays seem to come, causing the glass to shine with a green phosphorescent light. These rays travel in straight lines, cast shadows, and are capable of being deflected by a magnet, which has led to the belief that they are streams of minute particles. Though observed some years previously, it is to Crookes, who in 1876 called them to the attention of scientists, that we are mainly indebted. While cathode rays are not so important in themselves, they have the peculiar power, when they strike the walls of the vacuum tube, of setting up another kind of radiation known as X-rays. See CROOKES; X-RAY.

Catholic Church, The, in its largest sense the entire body of Christian believers; in a restricted, but ordinarily accepted sense, the Church of Rome; those who recognize the see of Rome, that is to say, the pope, as the head of the church. It is impossible to condense the doctrine of the greatest church on earth into a few lines. A full discussion must recognize four cardinal points of belief: the supremacy of the pope or a belief in his full authority in matters of faith and morals; the right of the church to say what the Scriptures mean; the sacrament of confession and penance as a divinely appointed way to ob-

Cardinal Dougherty

Cardinal Farley

Pope Benedict XV

Cardinal Gibbons

Cardinal O'Connell

THE BURIAL PLACE OF AN IMPERIAL FAMILY

HADRIAN'S TOMB, ROME

This circular mass of masonry was built in 136 A. D.

SAINT PETER'S CHURCH, ROME

The largest Christian church in the world, dedicated in 1626. Its beauty reveals the genius of the greatest of its architects, Michelangelo.

tain forgiveness of sins; and the direct line of apostolic succession or priesthood derived through the apostles from Jesus Christ himself.

As to its practical teachings, the most important are: equality of prince and peasant, regardless of nationality or color; the wickedness of human slavery; the duty of priesthood to refrain from marriage; the doctrine that marriage may not be cancelled by divorce, "What God hath joined together, let no man put asunder"; the sanctity of human life, "Thou shalt not kill"; the duty of providing for the unfortunate, as by hospitals and asylums. The latter end is attained largely by voluntary associations of men, called monks, and women, called nuns, who withdraw from the world, refrain from marriage, and devote their lives to works of mercy and charity.

A Catholic authority writing at the beginning of the century estimates that of 447,000,000 Christians, 230,000,000 belong to the Church of Rome. Of these 160,000,000 live in Europe and 58,000,000 in the two Americas. Of European countries, those situated on the Mediterranean are most solidly Catholic. France has 35,000,000; Sweden and Norway have but 1,000 each. There are in the United States, speaking for 1919, about 15,000 priests, 16,000 churches, and about 17,000,000 adherents. There are (1919) 22,587,079 Catholics under the United States flag. The count includes the Catholics of the United States proper, Alaska, the Philippines, Porto Rico, and the Hawaiian Islands. The Catholic population under the British flag, is 12,053,418. In the United States proper there are 17,549,374 Catholics. The directory shows 5,788 parochial schools in the United States, with an attendance of 1,633,599. The Catholic population of the leading states in the Union is as follows:

New York, 2,722,649; Pennsylvania, 1,494,766; Illinois drops from second to third place with 1,443,752; Massachusetts is next, with 1,373,772; Ohio has 619,265; Louisiana, 557,431; Wisconsin, 532,217; New Jersey, 496,000; Michigan, 489,451; Missouri, 452,703; Minnesota, 427,627; California, 391,500; Connecticut, 370,000; Texas, 283,917; Iowa, 242,009; Rhode Island, 242,000; Indiana, 218,758; Kentucky, 194,296.

There are in the United States 1 papal delegate, 3 cardinals, 14 archbishops, 97 bishops, and 21 abbots. There are 86 seminaries for ecclesiastical students.

In addition to the secular clergy there are 40 religious orders of priests represented in the United States, the principal ones being the Jesuits, Benedictines, Capuchins, Franciscans, Dominicans, Holy Cross Fathers, Paulists, Redemptorists, and Oblates. Representatives of 122 sisterhoods are engaged in teaching in the country.

New York and Chicago are rated as having 1,200,000 Catholic inhabitants each. In this count the villages and suburban towns are included. The archdiocese of New York does not embrace the city of Brooklyn, which is a diocese itself. The Boston diocese, which includes a large manufacturing territory outside the city, follows with a Catholic population of 700,000, while the diocese of Brooklyn is fourth with 500,000. Philadelphia is fifth with 485,000 and New Orleans sixth, with a population of 450,000, while Pittsburg, St. Louis, Cleveland, Newark, and Hartford follow. The archdiocese of Milwaukee is the fourteenth largest in the country with a population of 235,000. New York heads the list as to the number of priests, there being 824. Chicago follows with 643 clergymen, Boston 598, Philadelphia 521, St. Louis 507, Pittsburg 422, Baltimore 405, Milwaukee 362, and Cleveland 353.

Baltimore is the residence of Cardinal Gibbons; New York City, of Cardinal Farley; and Boston, of Cardinal O'Connell.

The following passage is taken from Macaulay's brilliant essay on *Ranke's History of the Popes:*

> There is not, and there never was on this earth, a work of human policy so well deserving of examination as the Roman Catholic Church. The history of that Church joins together the two great ages of human civilization. No other institution is left standing which carries the mind back to the times when the smoke of sacrifice rose from the Pantheon, and when camelopards and tigers bounded in the Flavian amphitheatre. The proudest royal houses are but of yesterday, when compared with the line

of the Supreme Pontiffs. . . . Nor do we see any sign which indicates that the term of her long dominion is approaching. She saw the commencement of all the governments and of all the ecclesiastical establishments that now exist in the world; and we feel no assurance that she is not destined to see the end of them all. She was great and respected before the Saxon had set foot on Britain, before the Frank had passed the Rhine, when Grecian eloquence still flourished in Antioch, when idols were still worshipped in the temple of Mecca. And she may still exist in undiminished vigour when some traveller from New Zealand shall, in the midst of a vast solitude, take his stand on a broken arch of London Bridge to sketch the ruins of St. Paul's.

See CHURCH; CHRISTIANITY.

Catholic University of America, an institution of higher learning, under the auspices of the Roman Catholic Church. It is located at Washington, D. C. It was organized in 1884, incorporated a year later, received its constitution from Pope Leo XIII in 1887, and in 1889 was opened for instruction. Its courses are designed to give training for various professions, and to offer to graduates from Catholic colleges an opportunity for original research. There were in 1918, over 1,800 students, and a faculty of 86.

Catiline (108-62 B. C.), a Roman senator. He was descended from a patrician but impoverished family. In politics he was an adherent of Sulla. He held various public positions, including that of praetor and governor of Africa. In 66 B. C. he desired the consulship, but was defeated.

Catiline was a man of depraved morals, intemperate habits, and of inordinate ambition. He surrounded himself with a coterie of young nobles who were noted for gambling, drinking, and every sort of debauchery. He formed a conspiracy to overthrow the authority of the Senate and place himself and companions in authority. Fulvia, a mistress of one of the conspirators, revealed the plot to the consul Cicero, who immediately set spies at work to ferret out the details. November 8th, after hostilities had actually been begun in the provinces, Catiline had the audacity to take his regular seat in the senate, whereupon Cicero turned upon him with the famous Catilinian oration, beginning "How long, now, O Catiline, will you abuse our patience?" To the astonishment of Catiline, Cicero went on to lay before the senate the innermost details of the plot. Catiline arose with haggard face and bloodshot eye. He made a miserable shift to reply; then, with curses on his lips, he turned with unsteady step and left the chamber. He hurried from Rome to join his forces in Etruria. Lentulus and others of the conspirators who remained in Rome to gather intelligence were arrested and executed as traitors. The consul Antoninus was sent against the forces of Catiline. Catiline fought with desperate bravery at the head of his troops, but was defeated and slain.

See SALLUST; CICERO; IBSEN.

Catlin, kăt'lĭn, **George** (1796-1872), an American writer and painter. He was born at Wilkesbarre, Pennsylvania, and died at Jersey City, New Jersey. He set up at Philadelphia as a portrait painter. He traveled extensively among various tribes of American Indians,—no less than forty-eight it is said. He exhibited Indian sketches in Europe and subsequently conducted three parties of Indians in full costume from city to city of the Old World. His chief written work is a finely illustrated two-volume account of *The Manners, Customs, and Condition of the North American Indians.* Over 500 original portraits and sketches are preserved in the National Museum at Washington, D. C. Future writers will owe much to Catlin for his descriptions and illustrations. See INDIANS.

Catnip, or **Catmint,** a mint-like plant. It is an immigrant from Europe, now quite at home in rich, shady spots around farm buildings and under pasture fences. It has a square stem, soft, hairy, heart-shaped leaves, and a white, deeply two-lipped flower, dotted with purple. Catnip tea is a standard remedy for a cold or colic. A bunch of catnip keeps company with boneset in all old-fashioned attics worth the name. A closely related creeping plant is often called ground ivy. See MEDICINE.

Cato (234-149 B. C.), a Roman statesman, surnamed "the Censor" and "the Wise." He served with Fabius during the invasion by Hannibal. He held a number of public positions. He was praetor in

command of Sardinia, served as consul, and did his best to keep a law on the statute books requiring women to dress in plain colors and to wear little or no jewelry. By such an attitude, and by inflexible honesty, he became popular with the people and was made censor, an office designed to amend whatever seemed to be going wrong. Some one asked him why a statue had not been erected in his honor. Cato replied, "I would rather have it asked why no image has been erected to Cato than have it asked why one had been set up." After the Second Punic War Cato was sent on an embassy to Carthage, and returned so astonished by its rapid recovery and its wealth, that he sought every opportunity to admonish the Roman senate of the danger of allowing so powerful a city to remain, ending every speech with the words now become proverbial, "Carthage must be destroyed." See SCIPIO; CARTHAGE.

Cato the Younger (95-46 B. C.), a Roman general and statesman. He was a great-grandson of Cato the Censor. Like his great ancestor he was a man of strict integrity, popular with the people. Among philosophers he is known as a Stoic. He served in military operations against the Spartans and in Macedonia. In the troublous days of the Catilinian conspiracy he supported Cicero. He opposed the plans of Pompey, Crassus, and Caesar. To get rid of him they sent him to govern Cyprus. He distinguished himself by turning an immense sum of money into the public treasury instead of stealing it. When Crassus and Pompey came to blows he took sides against Caesar, and, after his defeat at Munda, retired to the little city of Utica, near Carthage, where he fell on his sword rather than be reconciled to Caesar. Caesar is said to have exclaimed: "I grudge thee thy death, since thou hast grudged me the honor of sparing thy life." The residence of so great a man in so obscure a place gave point to the expression, "No pent-up Utica contracts your powers." Addison's tragedy of *Cato* is founded on the life of this Roman.

Catskill Mountains, a group of mountains about 2,000 feet high in southeastern New York. They have been stripped of their forests and are unfit for farming, but they furnish an unlimited supply of blue stone for building, and are a fine summer resort for the inhabitants of New York City. Irving has laid the scene of Rip Van Winkle's exploits in the Catskills. Passing up or down the Hudson Valley, the traveler is impressed by these mountains. They show to better advantage than the Alleghanies. The more elevated peaks reach a height of over 4,000 feet.

> Whoever has made a voyage up the Hudson must remember the Catskill Mountains. They are seen away to the west of the river, swelling up to a noble height, and lording it over the surrounding country. Every change of season, every change of weather, indeed every hour of the day, produces some changes in the magical hues and shapes of these mountains; and they are regarded by all the good wives, far and near, as perfect barometers.—Irving.

Cat-Tail, a plant of the swamps. A cluster of long, upright, sword-like leaves springs from the root. Two kinds of inconspicuous flowers are borne on a single tall stem at the height of a man's head. The fruit develops into a heavy, seal brown, cylindrical spike an inch or two in diameter. In pioneer days the cottony fruit was sometimes stripped from the stem and used in a tick as a substitute for feathers. In India elephants are fond of feeding on the cat-tail. The underground portion of the plant is starchy and is used in some countries for food. The cat-tail, with its long, graceful leaves and decorative cylinder of fruit, is a favorite plant with artists.

Catt, Carrie Chapman, one of the foremost leaders of the movement for women's suffrage in America, was born at Ripon, Wisconsin, and educated at the Iowa State Industrial College. Later she studied law. She entered the teacher's profession and became superintendent of schools at Mason City, Iowa. In 1884, she married Leo Chapman, who died in 1886. In 1890, she married George W. Catt, (died in 1905). Mrs. Catt became state lecturer and organizer of the suffrage movement in Iowa. Later she became identified with the American Woman's Suffrage Association and with the International Woman Suffrage Alliance. She

has served each of these bodies as president and has lectured in all the states of the Union and in most European countries.

Cattle, live stock. In its widest sense, the term includes horses, asses, camels, even goats, sheep, and swine. In stock-raising, however, it signifies animals, both large and small, of the cow kind.

Cattle have been domesticated so long that it is difficult to trace their origin. Some have supposed that they are descended from the wild ox of Central Europe. The goat in mountainous countries, the camel in the desert, the yak in the high altitudes of Asia, the reindeer on the mossy tundras of the north, and the cow on the grassy plains of all countries, each in the country to which it is best suited, furnishes milk, butter, cheese, flesh, leather, and tents for multitudes of people, and has rendered the development of civilization possible.

Horses are a luxury. Cattle are a necessity. Our cattle have been imported from western Europe. They were brought first to the New World by Columbus in 1493, and were introduced into Mexico by the Spaniards in 1525. The common cattle of the Gulf States, as far north as Virginia, and the long-horned Texas cattle, are descended from this Spanish stock. Cattle were imported from England into Massachusetts in 1624. Dutch cattle were brought to New York in 1627, and Danish breeds to New Hampshire in 1631. In the early days of the colonies Devons, Herefords, Shorthorns, Polled-Angus, Galloways, and Alderneys were introduced, but no attempt was made to keep the breeds pure. Pure bred Shorthorns were introduced into Kentucky in 1816; the breeding of pure Herefords in this country began in New York in 1840; the introduction of pure Polled-Angus cattle dates from 1870. Dairy farmers have introduced the Jerseys from the Channel Islands.

The history of cattle raising may be divided into two branches, that of cattle on farms and cattle on ranges. The management of cattle on an ordinary farm is too well known to require comment. A few cattle are kept according to the amount of pasture and feed available. The steers are raised for beef, and cows are cared for as dairy animals.

On the wide, grassy plains of Australia, Argentina, and North America, however, cattle are reared in immense herds. Instead of stables, barns, and winter feeding, the cattle run wild like buffalo or deer. The calves run with the cows. No use whatever is made of the milk, except that a cow or two may be tethered near the rancher's shack for the use of the family. Under this system it is impossible for a rancher to know just how many cattle he owns. An unbranded calf old enough to have separated from its mother is called a maverick, and belongs to any one who wishes to put his brand upon it. Once a year the cattle in a given region are rounded up by riders, and the calves are branded, usually on the hip, by a white-hot iron, with a mark of ownership. They are then released, to run without attention for another year. In the winter season they live on standing grass, which in these regions has the peculiar quality of drying up into excellent hay as it stands. The United States leads the world in cattle raising. Russia comes second with 43,000,000 head.

The United States agricultural report of 1920 gives the following as the number of cattle on farms in the United States, with an estimate for the world:

State.	Milch cows.	Other cattle.
Maine	179,000	143,000
New Hampshire	103,000	70,000
Vermont	278,000	190,000
Massachusetts	159,000	102,000
Rhode Island	20,000	14,000
Connecticut	118,000	80,000
New York	1,493,000	909,000
New Jersey	153,000	77,000
Pennsylvania	970,000	727,000
Delaware	46,000	24,000
Maryland	180,000	138,000
Virginia	437,000	578,000
West Virginia	250,000	384,000
North Carolina	328,000	394,000
South Carolina	211,000	249,000
Georgia	461,000	771,000
Florida	156,000	945,000
Ohio	1,061,000	1,113,000
Indiana	724,000	764,000
Illinois	1,060,000	1,290,000
Michigan	873,000	773,000
Wisconsin	1,846,000	1,493,000
Minnesota	1,395,000	1,730,000
Iowa	1,353,000	2,775,000

State or Territory	Milch cows.	Other cattle.
Missouri	919,000	1,746,000
North Dakota	464,000	617,000
South Dakota	561,000	1,526,000
Nebraska	601,000	2,911,000
Kansas	935,000	2,161,000
Kentucky	457,000	580,000
Tennessee	384,000	593,000
Alabama	502,000	842,000
Mississippi	571,000	716,000
Louisiana	378,000	725,000
Texas	1,138,000	4,458,000
Oklahoma	550,000	1,300,000
Arkansas	452,000	691,000
Montana	180,000	936,000
Wyoming	82,000	787,000
Colorado	272,000	1,355,000
New Mexico	87,000	1,378,000
Arizona	57,000	1,200,000
Utah	109,000	518,000
Nevada	35,000	535,000
Idaho	136,000	537,000
Washington	228,000	298,000
Oregon	224,000	708,000
California	571,000	1,634,000
	23,747,000	44,485,000

THE WORLD.

Canada	8,000,000
United States	73,000,000
Mexico	5,000,000
Central America	2,000,000
Cuba	3,000,000
South America	76,000,000
Europe	126,000,000
Asia	112,000,000
Africa and Australia	121,500,000

See PACKING HOUSE; STOCKYARDS; BEEF; BUTTER; COLD STORAGE; CHICAGO; CHEESE; and the various bureaus under AGRICULTURE, DEPARTMENT OF.

Cattle Tick, an insect related to the mite. Like other ticks it has a parasitic habit of living on the blood of other animals, particularly cattle. It is a native of the western and southwestern plains where it has become a pest, not so much on its own account, but because it imbibes the germs of the Texas cattle fever from the blood of an infected animal and carries them, just as certain mosquitoes carry the germs of malaria, to healthy animals. Southwestern cattle have become immune to the fever, that is to say, their blood has acquired a quality which prevents the fever germs from multiplying; but northern cattle die of the plague in great numbers. In order to kill the ticks, cattle shipped out of infected districts are dipped by driving them through deep tanks of cottonseed or other oil before loading them on cars. Dipping tanks are now a regular feature of shipping stations throughout the cattle-raising country. At maturity the female tick gorges itself most disgustingly with blood, loosens its hold on the animal's hide, and drops to the ground where it lays its eggs and dies. On hatching out the young climb up bushes and fasten themselves to passing cattle to which they cling and feed until they are full grown.

Catullus (87-54 B. C.), a Roman poet. Catullus belonged to a wealthy and distinguished family. In brilliancy, wit, choice of subjects, style, and disregard of domestic proprieties, Catullus stands with the school of Roman writers most nearly represented in English literature by Shelley and Byron. His extant works are 116 lyric, elegiac, and epigrammatic poems.

Caucasian Race, one of the three great races of mankind. It is the white race, as distinguished from the yellow and the black races. The name is derived from the Caucasus Mountains in which the finest specimens of the race were believed to live. The original home of the white man is believed to be North Africa. Roughly speaking, Europe and North Africa, including Abyssinia, Western Asia and India, Australasia and the two Americas, exclusive of Indians and Africans, are peopled by the white race. Many tribes of dark complexion belong to the white race as determined by the shape of the head, hair, eyes, and lips. The hair is never woolly; the nose is large; the lips are not oblique; the cheek bones are small; and the features are regular. There are perhaps 770,000,000 Caucasians, about half of the human race. See POPULATION.

Caucus, a meeting of voters to nominate candidates for office or to name delegates to a nominating convention. In American politics a caucus is strictly a party affair. It is not considered honorable to participate in a caucus held by an opposing party, and in many states such a practice is forbidden by law. In case a United States senator is to be elected it is not unusual for the legislative members of each party to caucus, that is, meet to decide upon a

candidate to be supported in formal ballot by the entire party strength. A nomination in caucus by the prevailing party is almost equivalent to an election, as all who enter a caucus are held, according to political codes, to abide by the action of that caucus. The word is first used of certain gatherings of the popular leaders of Boston under the lead of Samuel Adams, to decide upon policies and candidates for office. Thus John Adams wrote in his diary under date of February, 1753: "This day found that the Caucus Club meets at certain times in the yard of Tom Dawes, adjutant of the Boston (militia) regiment." See ADAMS, SAMUEL.

Caudle's Curtain Lectures, Mrs., a series of humorous sketches by Douglas Jerrold. They purport to be lectures delivered by Mrs. Margaret Caudle to her husband, Mr. Caudle, during a period of thirty years. The time chosen by Mrs. Caudle for these lectures is after they have retired and the curtains are drawn for the night. They are full of humor, and it is by them rather than any of his other work that Jerrold is known. See JERROLD.

A CURTAIN LECTURE OF MRS. CAUDLE.

Bah! that's the third umbrella gone since Christmas. What were you to do? Why, let him go home in the rain, to be sure. I'm very certain there was nothing about him that could spoil. Take cold, indeed! He doesn't look like one of the sort to take cold. Besides, he'd have better taken cold than taken our umbrella.

Do you hear the rain, Mr. Caudle? I say, do you hear the rain? Pooh! don't think me a fool, Mr. Caudle; don't insult me; *he* return the umbrella! Anybody would think you were born yesterday. As if anybody ever did return an umbrella! . . .

There: do you hear it? Worse and worse. Cats and dogs, and for six weeks: always six weeks; and no umbrella! I should like to know how the children are to go to school to-morrow! They sha'n't go through such weather, I am determined. No; they shall stop at home and never learn anything (the blessed creatures!), sooner than go and get wet. . . . .

But I know why you lent the umbrella: O! yes, I know very well! I was going out to tea at dear mother's tomorrow: you knew that, and you did it on purpose. How I am to go, I'm sure I can't tell; but if I die, I'll do it. No, sir; I won't borrow an umbrella: no; and you sha'n't *buy* one. Mr. Caudle, if you bring home an-another umbrella, I'll throw it into the street.

Cauliflower, a garden variety of the common cabbage. The name is the same as "coleflower." The cauliflower head is really a monstrosity. The common cabbage forms a head of closely compacted leaves. The head of the cauliflower consists of the flowering parts greatly shortened and grown fleshy. The head is merely a perverted flower-stalk—a botanical monstrosity. Methods of sowing, transplanting, and cultivating are the same as for cabbage. The cauliflower does not head in hot weather. Unless grown in a cool locality cauliflowers should be set out early, to head before midsummer, or else they should be set out late, to head after the heat of midsummer has passed. Cauliflower is not frost-proof, but the heads can endure ten or twenty degrees of frost if left standing in the garden.

Cavalier, a term akin to cavalry. It was applied to the gay followers of the Stuarts during the great Civil War in England by way of distinction from the somber, austere followers of Cromwell. Their best side is turned toward us by Macaulay in his celebrated *Essay on Milton:*

Thinking as we do that the cause of the King was the cause of bigotry and tyranny, we yet cannot refrain from looking with complacency on the character of the honest old Cavaliers. . . . It was not for a treacherous king or an intolerant church that they fought, but for the old banner which had waved in so many battles over the heads of their fathers, and for the altars at which they had received the hands of their brides. Though nothing could be more erroneous than their political opinions, they possessed, in a far greater degree than their adversaries, those qualities which are the grace of private life. With many of the vices of the Round Table, they had also many of its virtues, courtesy, generosity, veracity, tenderness, and respect for women. They had far more both of profound and of polite learning than the Puritans. Their manners were more engaging, their tempers more amiable, their tastes more elegant, and their households more cheerful.

Cavalry, mounted soldiers. Cavalry as a military force originated, no doubt, on the vast treeless plains of Asia, the native home of the horse. The fabled centaurs of mythology appear to have been suggested to the fertile Grecian imagination by the incursion of horseback warriors from Thessaly. The ancients very gener-

ally employed cavalry as an important arm of public service. The Assyrian horseman is depicted on monuments. Miriam's song of rejoicing gives thanks for the overthrow of the Egyptian horse and his rider. Alexander's cavalry was well drilled and efficient. The cavalry of the Romans was put to flight by the elephants of the Carthaginians. The invading hordes of Genghis Khan and Tamerlane overran eastern Europe with incredibly large bodies of light cavalry. The Cossacks on their wiry ponies, each man carrying his own means of subsistence, are an important part of the military force of Russia.

During the Middle Ages the knight in heavy armor was almost useless without his horse. Even though archery and the invention of gunpowder set aside the coat of mail and the war-horse, modern nations have never ceased to regard cavalry as indispensable. Cromwell's dragoons were too much for the English cavaliers at Marston Moor and Naseby. Claverhouse's troopers harassed the Scottish covenanters for many a year. The moss trooper and the border raider rode mettled steeds. During the war of the American Revolution Marion and his midnight riders had more than one tilt with the British horse. During our Civil War cavalry was used skillfully on both sides. Sheridan, Custer, Kirkpatrick, Morgan, Forest, and Stuart led many a daring raid. The charge of Napoleon's old bodyguard at Waterloo is one of the most dramatic incidents in modern warfare. The charge of the Light Brigade at Balaklava has been immortalized by Tennyson. The Uhlans of the Germans and the French Chasseurs had many a spirited skirmish during the Franco-Prussian War. The Lancers are a crack British cavalry regiment.

Most of the European governments take pains to foster the raising of such horses as may be needed for cavalry service. Germany in particular maintains a fine establishment where horses are raised for royal use and for sale to horse-breeders throughout the empire.

The plains Indian has been well mounted for two centuries on tough ponies, cayuses, bronchos, or mustangs—the descendants of horses introduced into America by the Spaniards. Without cavalry it would have been a hopeless task for the United States army to attempt to afford protection to the rancher, railway builder, and pioneer of the West.

At present the authorized strength of the United States regular cavalry consists of fifteen regiments. Each regiment contains three squadrons of four troops each. A full troop consists of 100 men, but disability of men and horses seldom permits a display of the full fighting strength of 1,200 men per regiment. The cavalryman is provided with a breech-loading carbine, a pistol, and a saber. His horse is equipped with a saddle, a bridle with a rein and a curb bit, a halter, a blanket, and a pair of saddle-bags. In 1921 the cavalry force in the United States army numbered 950 officers and 20,000 enlisted men. A cavalryman must be not less than 5 feet 4 inches, and not more than 5 feet 10 inches high, with a weight not to exceed 165 pounds.

Cave, an underground chamber. Generally speaking it may be said that soaking, trickling, and running waters form caves by dissolving and removing rock material around some crack or fissure. In case of sandstone the cement is dissolved, and the stone falls into sand easily carried away. In limestone caves practically the same action takes place. Lava caves are due to the action of gas. Such are found near Naples, and in Iceland and Hawaii. For a basalt cave, see FINGAL'S CAVE. The Peak cave in Derbyshire, England, is half a mile in length and 600 feet below the surface. It is noted for marble formations in the form of cascades and trees. The deepest cave known is that of Frederikshall, Norway, 11,000 feet below the surface. Many of the European caves contain remains of the cave dwellers, the cave bear, the cave hyena, and of elephants all well preserved in deposits of lime. One of the most remarkable cave regions of the world is the limestone basin of the Ohio Valley. The various passageways of Wyandotte Cave in Crawford County, Indiana, have a total length of twenty-three miles. One stalagmite, called the Pillar

of the Constitution, is 75 feet in circumference and 30 feet high. Monument Mountain is 175 feet high; and 75 feet overhead again is a vaulted dome, so lofty are some of the passages. See MAMMOTH CAVE; STALACTITE.

Cave Bear, an extinct bear of Europe. In the floors of limestone caves in various parts of Europe the bones of a large bear have been found, to which the name of cave bear has been given. Its bones are found with those of many other animals now extinct. A belief is gaining ground that the cave bear was simply a large variety of the common brown bear of Europe. See BEAR.

Cave Dwellers, a name given to prehistoric peoples of whom traces have been found in caves of western Europe. The name has come to be somewhat loosely used, even to designate all prehistoric races as though all had at some time inhabited caves. Although this can hardly be true, there is sufficient evidence that a race, tall and of powerful build, did live, during the stone age, in caves and caverns of Belgium, France, England, Wales and Spain, and probably in many other places. Ornaments, weapons, and utensils of stone, bone, flint, and ivory have been found, as well as the teeth and bones of animals, upon whose flesh these people probably subsisted. It is evident that the cave-dwellers were ignorant of agriculture, of pottery and of metals, and that their manner of life was primitive in the extreme. See CLIFF DWELLERS.

Cavendish, Henry (1731-1810), a distinguished English scientific investigator of the eighteenth century. He belonged to a noble family. He studied at Cambridge, but did not take his degree. Cavendish was a lifelong bachelor. He used a fortune left him by an uncle to gratify his tastes in chemistry. He had a fine laboratory in which he shut himself off from the world completely. He was so unwilling to be interrupted that even his cook took orders from a note left in the hall. Cavendish made valuable discoveries in the composition of air and water, and, although he did not get the matter quite straightened out, he has high rank in the history of the development of chemistry. In 1766 he described inflammable air lighter than ordinary air, since recognized as hydrogen. This discovery was utilized at once in a series of efforts to construct balloons. He held to the phlogistic theory (see article on CHEMISTRY), but was puzzled to find that, after the outrush of "fire material" from substances burned in a receiver, the amount of air was diminished.

Caviare, kȧ-vēr′, a table delicacy made from the roe or eggs of the sturgeon. The center of production is at Astrakhan, Russia, where caviare is prepared in immense quantities from the sturgeon caught in the Volga River. Of late the Lake of the Woods, on the boundary line between Canada and Minnesota, has become an important center of production, a company having practical monopoly of the immense number of sturgeon to be found in that body of water. In preparation the roe is washed in vinegar and dried in the sun, after which it is rubbed with salt and packed in small kegs. See STURGEON; ISINGLASS.

Cavité, kä-ve-tā′, a province and city in the southwestern part of the island of Luzon, Philippines. The province has a population of 134,500. The town is situated on an island harbor. It was the scene of Admiral Dewey's victory over the Spanish fleet, May 1, 1898. It is now the naval headquarters of the United States in the Philippines. Population, about 3,000. Both province and town are tributary to Manila, with which there is communication both by water and by good roads. See PHILIPPINES.

Cavour, kä-voor′, **Count** (1810-1861), an Italian statesman. He was born and educated at Turin. He studied abroad, particularly in England. He became the prime minister and adviser of Victor Emmanuel, the king of Sardinia. He bears the same relation to united and free Italy that Bismarck bears to the new German Empire, except that his task was a more difficult and delicate one, and that he carried it to success with less sacrifice of honor and morality. Italy had been split up by France and Austria into several kingdoms. In point of strength it might be compared to a lamb with these two

large powers snarling and ready to devour. To rescue Italy from the jaws of Austria, without allowing it to fall into the mouth of France, and to unite the several petty kingdoms into one Italy was a difficult task; yet, barring the loss of Nice and Savoy to France, this was accomplished. Cavour was the statesman who planned the moves and formed the alliances. Victor Emmanuel was the man of action whose plume waved on the battlefield. See ITALY.

Cavy. See GUINEA PIG.

Caxton, William (1422-1491), the first English printer. He was a wealthy London silk merchant. While a commercial envoy at the court of Burgundy, he caught the book-collecting fever. Books had been coming from German presses for thirty years. In 1474, eighteen years before the discovery of America, he translated a *History of Troy* from the French and printed it for sale. This was the first book printed in England. A year later he published *The Game and Playe of the Chesse.* He then went into the business extensively at Westminster, then a suburb of London. Books from the Caxton press are the poems of Chaucer, Gower, Aesop's *Fables, Reynard, the Fox,* a version of the *Æneid,* Malory's *Mort d'Arthur,* and various manuals for the use of the clergy, in all sixty-four, or, so others say, ninety-nine volumes. He offered his most expensive volumes at six pounds, about thirty dollars. A volume sold recently at a London book auction fetched $10,000. See BOOK; PRINTING.

Patriarch of the English press! Stranger to the powers that slumber in thy craft, insensible to those elevated conceptions that guide the world's helm, yet thy honest toil for the day and honest hope for the morrow shall accrue to the advantage of mankind continually, forever. Lad—apprentice—mercer—retainer—hoary learner—venerable printer—thou, simple man, by the accident of time and the grace of fortune, shalt live in immortal memory!—*Welsh.*

Cayenne (ka-ĕn′) **Pepper,** the pulverized fruit of a plant belonging to the same family as the ground cherry, tomato, and potato. It is not a pepper at all, but it was first imported from the port of Cayenne in French Guiana. The proper name is capsicum, but under the name of "red pepper" it has spread from tropical America, and its red, peppery pods are well known in American gardens. The young pods are pickled to make Chile sauce. In spite of a little change in shape and color and a decided difference in taste, one cannot fail to see the marked similarity which the fruit of this plant bears to that of the ground cherry. See PEPPER.

Cayuse, kī-ūs′. See MUSTANG.

Cecilia, Saint, the patroness of music, said to have suffered martyrdom in 230 A. D. Her day is November 22d, and her name is one of the best known in the entire Roman calendar. She has been a favorite subject for poets and painters. Her popularity seems to be due almost entirely to the fact that, in the legends concerning her, brief mention is made of her using musical instruments to accompany her voice when praising God. The story is that Cecilia was a Roman maiden who, converted to Christianity, vowed never to marry. Her parents, however, promised her hand to a young pagan named Valerian. Cecilia succeeded in converting Valerian and he suffered martyrdom. Commanded to sacrifice to idols, Cecilia refused and was condemned to die. It was found, however, that fire did not burn her, nor was the headsman's axe able to sever her head from the body. A few days later she died and received the martyr's crown. A church was erected in Rome to Saint Cecilia as early as the fifth century. She is said to have invented the organ; other legends recount that her music called an angel from heaven, who brought her martyr's crown from paradise. Raphael and others have painted portraits of St. Cecilia. Chaucer, Dryden, and Pope have celebrated her name in poetry. Musical societies the world over are named for Cecilia, and on Saint Cecilia's day splendid music is to be heard in Roman churches.

Cecrops, sē′krops, in Greek legend, the first king of Athens. The people of Athens were sometimes called Cecropidæ. According to older legends, he was half man and half dragon. He brought civilization to Greece, introducing agriculture, navigation, and commerce. Later accounts mention him as of Egyptian origin.

Cedar, a name applied indiscriminately to several evergreen trees with aromatic wood. The cedar of history is the cedar of Mt. Lebanon in Palestine. When Solomon purposed building a temple he sent his men, 10,000 a month, by agreement with Hiram of Tyre, to hew cedars of Lebanon. "Hiram gave Solomon cedar trees and fir trees according to all his desire, and Solomon gave Hiram 20,000 measures of wheat for food to his household." Cedars of Lebanon are to be found about 6,000 feet above the sea level. They are widely branching, hospitable trees with limbs extending horizontally as though each branch and its twigs had been pressed flat. "The cedar spreads his dark green layers of shade," says Tennyson. Cones four to five inches in length rise from the upper surfaces like candles on a Christmas tree. The tree grows to a height of eighty feet. A few fine old specimens are left on Mt. Lebanon with a girth of from fifty to sixty feet and a breadth of top nearly double their height. The Arabs regard them with the utmost reverence. The cedar of Lebanon is fragrant, and was much prized for cabinet purposes. A number of fine specimens over 200 years old flourish in English parks, but our climate is too trying for them.

The deodar of the Himalayas, "the tree of the gods," from which Kipling's *Under the Deodars* takes its name, is a genuine cedar. A third cedar is that of the Atlas Mountains in Africa. There are but the three. The woods known in America are related, but are not genuine cedars. Our red cedar, so much used for the wood of lead-pencils, anti-moth fur chests, and cabinet work, has beautiful, close-grained red wood even more fragrant than the cedar of Lebanon, but it is a smaller tree and is known to botanists as the Virginian juniper. The white cedar, with loose shreddy bark, of our eastern swamps, much used for fence posts, is also a tree of another name belonging to the pine-family, and stands half way between a cypress and a cedar. Several other trees commonly called cedars and cypresses are only near relatives. The red cedar or juniper, once abundant on the Atlantic coast, is now to be sought in Florida. The demand for cedar wood for lead-pencils and penholders has been so great that cedar fences seventy-five years old have been purchased at high prices and sent to the mill.

See CONIFER; LEAD-PENCIL.

Cedar-Bird. See WAX-WING.

Cedar Rapids, a prosperous city of Iowa. It is situated on the Cedar River which furnishes valuable waterpower utilized in manufactories. The city is served by four railroads, as well as an electric line connecting it with Iowa City. It has excellent schools, an opera house, a public library, a Masonic Temple, and an auditorium. Coe College is located here. Among manufactures may be mentioned flour, cereals, starch, dairy products, furniture, pumps, and farming implements. There are also railroad and machine shops, foundries and pork packing establishments. The population in 1920 was 45,566.

Celery, a garden vegetable belonging to the parsnip family. Unlike many of its relatives, celery is cultivated for its leaf stems, which are eaten with salt or used to flavor soups and salads. We can hardly call celery an article of food, though thousands of tons are raised under improved methods. Celery is on the market the year around. Celery grows wild in England and southern Europe, but it is unfit for table use. Garden celery originated in Germany. It is started and set out and cultivated not unlike cabbage. It does best in moist, peaty soil that has been ditched and subdued thoroughly by pulverizing and the addition of the plant food that is lacking in peat beds.

The knack of celery cultivation lies in "blanching." At the proper time the celery stalks are shut off from light, either by means of boards, heavy paper, or by hilling them up with earth. As a consequence the celery turns white and tender like potato sprouts in a dark cellar. Anyone can raise celery that can raise cabbages; but not everyone knows how to blanch it successfully. Old peat swamps and skill have made Kalamazoo, Michigan, a noted celery center. In 1905, the banner year, Kalamazoo shipped over $2,000,000 worth

of celery. During the shipping season, which lasts ordinarily from July to February, from thirty to sixty tons of celery are shipped daily. The reputation of Kalamazoo as "the celery city" is due to industrious Hollanders, who brought the art of gardening with them from their native country.

Michigan-grown celery has the highest reputation in the Middle West. Not all "Kalamazoo" celery is grown at Kalamazoo. There are other centers. A tract of land fifteen miles west of Grand Rapids is classed as one of the most productive celery regions known. An old bog some fifteen miles long and perhaps half a mile wide has firm clay sides, and seemingly no limit as to bottom. The soil is a rich black muck. V. H. and Z. celery, so named from the three neighboring stations of Vriesland, Hudsonville, and Zeeland, is raised here. A coöperative association of celery raisers has been formed. There were in 1908, 141 members. An agent ships the celery in crates to Chicago wholesalers. In the year named, 35,000 crates, 57 carloads, were shipped by freight, and enough more was shipped by express to bring the total for the year to 150,000 cases. The price in Chicago varied from $1 to $1.15. From 150 to 300, and even as high as 500, cases are raised per acre.

See VEGETABLES.

Celestial Empire and **Celestials,** a popular term for the Chinese Empire and its inhabitants.

Celibacy, the state of being unmarried. By common usage, the term refers primarily to men, but virginity is as much a state of celibacy as is bachelorhood. Nuns take a vow of perpetual virginity. Coelebs, originally meaning unmarried, has acquired the force of bachelor, as in *Coelebs in Search of a Wife.* Celibacy has been further intensified by its application to a single life as the result of a religious vow. The monks of various religious orders take a vow of celibacy. In the Greek Church celibacy is required of bishops and monks, but priests and deacons may remain married if married before ordination. They may not marry after ordination. In the Roman Catholic church celibacy is enjoined upon all ranks of the clergy. A married man may be consecrated only if his wife enter a religious order. The position of the Roman Church is stated well by a writer in the *Americana:*

> As no one has a right to demand to be consecrated a priest, the Roman Church has, by this addition, violated no one's right. Her position, therefore, is expressed by saying that, profoundly convinced that an unmarried clergy is best suited to her work, she admits to her ministry only those who voluntarily engage to lead a celibate life, and as long as she finds a sufficient number of such candidates she refuses to hamper her work by the employment of others.

Cell, the unit of structure in plants and animals. The lowest forms consist of a single cell, while the higher are aggregations of cells greatly differentiated. They are microscopic in size, averaging not much over one-thousandth of an inch in diameter. A typical individual cell would be spherical, but as built into organisms they become variously modified in shape. A cell is a thin-walled sac containing the jelly-like protoplasm, within which is a somewhat denser portion known as a nucleus which in its turn contains the nucleolus. This protoplasm is the fundamental living substance by which growth is accomplished. In cell multiplication the nucleus plays an important part, the division of the nucleus occurring first. It is by this power of repeated self-division that a single egg cell may become a highly organized plant or animal body.

Celluloid, sĕl′u-loid, an artificial substance used in the manufacture of combs, collars, cuffs, toilet boxes, brush handles, and many other fancy articles. It is made of cellulose, which is first converted by acids into the explosive guncotton. Camphor to give plasticity, and coloring matter to imitate tortoise shell, or some other substance, are added, and the mixture is molded by heat and pressure into the desired form. Celluloid is attractive, but not altogether safe. If touched by a live coal, spark, or lighted match, a celluloid article is likely to explode with a flash, like gunpowder. The manufacture of celluloid is interesting and quite simple. It is, however, on account of the chemicals employed, very injurious to the workmen. They

are obliged to wear rubber garments and their faces acquire a ghastly hue. The cellulose, in the form of paper, is wound on hollow spindles carrying several hundred yards each. These are unwound and sprayed with acids which convert the paper into guncotton. The guncotton is washed, ground into pulp, bleached, and dried. At this point, crude camphor, carefully weighed, and dye, if any is to be used, are added. Grinding and pressing in "masticators" follow. The masticators are huge iron rollers, geared to turn inward. The mass is mixed thoroughly and issues from the masticators in the form of great inch-thick sheets, which are piled, one upon another, to fill a heavy iron box. A steam heated hydraulic press welds these sheets together in a solid cake. This great cake of celluloid is cut into sheets, varying in thickness from one-thousandth of an inch to a full inch or more, according to the articles for which they are intended. These sheets are cut, turned, and pressed into a variety of fancy articles. The small articles are cut from the cold celluloid, plunged into hot water to soften them, bent and shaped, and dropped into cold water to cause them to retain their shape. Celluloid imitates ivory, tortoise shell, coral, amber, and other materials so faithfully that experts are required to detect it.

Cellulose, sĕl′u-lōs, a substance allied to starch and found in plants. It is the principal constituent of cell walls. One third of all vegetable material consists of cellulose. It is composed of the same elements, carbon, hydrogen, and oxygen, that form starch, sugar, and alcohol, only in different proportions. Cotton fibers are almost pure cellulose. Linen cloth, in fact most fibers, are of cellulose. Soft, unglazed paper is cellulose. Filter paper is of cellulose; so is a hornet's nest. Young wood consists largely of cellulose. Fifty-five per cent of poplar wood consists of cellulose. When heated under certain conditions, as when wood is roasted, cellulose may be converted into wood alcohol. By treating cotton with strong nitric and sulphuric acid the cellulose is converted into a powerful explosive, known as guncotton. Collodion is formed of guncotton dissolved in alcohol. By treatment with sulphuric acid, cellulose is also coverted into glucose, the basis of cheap syrup. Elder pith and cornstalk pith are chiefly cellulose. The latter is now used as an inner lining for the steel hull of a man-of-war. A three foot wall, or padding, made of corn pith is built inside of the steel plates. If by chance a shot should penetrate the steel plate and the pith lining, the water which is admitted would swell the cellulose and plug the shot hole. See GLUCOSE; ALCOHOL; CELLULOID.

Celsius, sĕl′se-ŭs, **Anders** (1701-1744), a Swedish mathematician. He was a graduate of Upsala. He became a professor of astronomy in that institution in 1730. Later he traveled and studied at Nuremberg and Paris. Celsius was interested in lineal measures. He traveled to Lapland to get the measure of a degree of latitude. He was the first to propose a division of the difference of the temperature between the freezing and boiling points of water into 100 parts. Hence the Centigrade thermometer is sometimes said to be constructed on the Celsius scale. Although Anders was the most celebrated member, it is worthy of notice that four generations of the Celsius family were famous as scholars, professors, and churchmen. See THERMOMETER.

Celts, or **Kelts,** the earliest settlers of the white race in Europe. Before the dawn of history they appear to have been subdued, and incorporated or driven westward by succeeding waves of Germans and Slavonians. The Romans called them Gauls; they called themselves Celts. The French and Belgians are supposed to be largely of Celtic blood. At the present time, however, the term is restricted to the Scottish Highlanders, the Celtic Irish, the Manx of the Isle of Man, the Welsh, the Cornish, and the inhabitants of Brittany in northwestern France. The principal dialects are the Gaelic, the Erse, the Manx, and the Welsh. The Cornish dialect is now extinct. The inhabitants of Brittany speak a dialect very similar to that of the Welsh. The English language is indebted to the Celts for many words, as bard, basket, boisterous, brand, bugbear, pony, ribbon, tether, shamrock, flannel, mackintosh, ptarmigan,

whiskey, Tory, spalpeen, brogue. The Celts are a highly imaginative people. Writers of Celtic blood have contributed largely to the bright imaginative portion of our literature. See SCOTLAND; IRELAND; BRITTANY; WALES; ARTHUR; BOADICEA; DRUIDS; BARROWS; BROCH; CROMLECH.

Cement, a well known building material. Its use was known to the Egyptians 4000 B. C. It differs from lime in that it contains an additional ingredient in the shape of a fine clay. Hydraulic lime is really a cement. The most famous cement is made by first grinding a fine clay and a pure limestone or chalk into a powder, and then burning the mixture at a high temperature. It is shipped in sacks or barrels, and requires to be kept dry. When mixed with sand and water it sets or hardens, even under water, into a drab, stone-like mass resembling in color, at least, a building limestone much quarried at Portland, England, whence the name of Portland cement.

This cement is entirely artificial. The first patent was taken out in England in 1824, but the industry soon spread to France and Germany. In America the making of Portland cement got footing at Coplay, Pennsylvania, in 1878.

The largest producing districts are now Eastern Pennsylvania and New Jersey, 27,079,000 barrels; Illinois and Indiana, 12,406,000 barrels; California and Washington, 8,916,000 barrels; Iowa and Missouri, 8,477,000 barrels; Ohio and Western Pennsylvania, 7,704,000 barrels.

Concrete, a mixture of sand, cement and crushed stone or gravel is growing in favor in the construction of buildings. Concrete, reinforced with rods of iron, is used for the frame work and floors. The side walls between the frames are usually filled with brick and tile. This class of construction was the only one that stood the test of the San Francisco earthquake in 1906. Concrete is also used for walls, foundations, sidewalks, fence posts, bridges, etc.

The center of the Portland cement producing industry in this country is the Lehigh district of Pennsylvania and New Jersey. In 1913 these two states produced a total of 27,079,000 barrels out of a total of 92,000,000 barrels for the entire United States. The cement output of the United States had increased over 300% in ten years.

See BRICK; POTTERY; CLAY; LIME; STUCCO; PLASTER OF PARIS.

Cemetery, as distinguished from a churchyard place of burial, an open, ornamental, park-like burying ground. The term carries with it more or less of a public idea. Some churches, particularly the Church of Rome, and to an extent the Church of England, bury only in consecrated ground. Scottish cemeteries are open to all. The idea of a large cemetery, ornamented with trees and drives, open to all who choose to purchase lots, has become quite popular, especially in connection with large cities. The cemetery of Père Lachaise near Paris is one of the most celebrated in the world. Many renowned Parisians lie here. Among American cemeteries of note are Greenwood, on Long Island; Mount Auburn, near Boston; Magnolia Cemetery, Charleston; and Lakeview, Cleveland. Public cemeteries more or less adorned have been provided by nearly all American towns and communities. See CATACOMBS; PÈRE LACHAISE.

Cenis, se-nē′, a mountain of the southeastern Alps between southern France and northern Italy. It is crossed by the Mount Cenis Pass, 6,697 feet above the level of the sea. This is the route by which Napoleon first constructed his winding roadway over the mountain. In 1857 work was begun on a railway tunnel through the shoulder of the mountain. Workmen labored at each end. On Christmas Day, 1870, they met in the middle of the mountain and found that their borings lacked but a few inches of being in line with each other. The tunnel is wide enough for two railway tracks. It is about eight miles in length and cost nearly $12,000,000. Part of the expense was defrayed by the governments of France and Italy, and part by the Northern Railway Company of Italy. Prior to this date railroad communication between the two countries was not practicable. See BERNARD; SIMPLON; TUNNEL.

Censer, sĕn'ser, a cup in which incense is burned. The censer is usually suspended by chains and carried in the hand. It is swung to and fro to create a draft and to spread the odor of the incense. Censers of one sort or another prevailed among the Hebrews, the Greeks, and the Romans. They are now wafted before the altars of the Greek Church and of the Church of Rome, and are used, to some extent, by the Church of England.

Censor, a public official whose permission must be obtained to issue a newspaper, book, or other printed matter. During the Middle Ages officials of the church, particularly the bishops, acted as censors of manuscripts. Even with the Reformation the practice was not at once abandoned in Protestant countries. The censorship was not abolished in England until 1693. At the present time a mild censorship is maintained in Germany. A very rigorous oversight is kept up in Russia. Otherwise freedom of the press prevails throughout Europe and in all civilized countries. Libel, treason, and other objectionable matters are, of course, forbidden by law. The Roman censors were charged at first with the duties of our present assessors. By degrees they were empowered to direct people's customs and morals. They prescribed what ought to be worn and what ought not to be worn, and were even able to expel a senator from his seat.

Census, a count of the people. The Constitution of the United States provides that an actual enumeration of inhabitants shall be made every ten years. A census was taken in 1790, and one has been taken at the end of each succeeding ten years. The first census was taken by the United States marshals, and was little more than a count of the people. The compiling and elaborating of statistics now requires the employment of a permanent corps of clerks and a director of the census. The eleventh census cost nearly $12,000,000. The twelfth census, taken in 1900, has been published in ten large quarto volumes. The thirteenth census was taken in 1910, but much of the information has not yet been compiled and printed. In addition to statistics, these volumes are packed with a large amount of valuable historical matter relative to the various domestic animals and the chief manufactures.

The first census of which we have any historical mention is that taken of the Jews by David. A prejudice existed among the ancients against the practice. It was believed that counting the people was an impious act likely to be punished by a visitation of the plague. In Sweden, England, and other countries, regular systems of taking a census have grown out of former computations of parish statistics furnished by clergymen and others. The first regular English census was taken in 1800. Most civilized countries now take a census every ten years. In the United States the general government offers to share half the expense of a state census, if taken midway, that is, in the year ending in five, as 1905, 1915.

See CENTER OF POPULATION.

Centaurs, sĕn'tors, in Greek mythology, rude, savage monsters, half man and half horse. They were reputed to be descendants of Ixion and a Cloud. It is quite possible that the myth may have been derived from a race of gigantic men inhabiting the mountains and forests of Thessaly. Their chief occupation, it is supposed, was that of hunting. Being horsemen, their raids and quarrels with neighboring tribes were conducted on horseback. This may have given rise to the myth current in Pindar's time of savage hairy beings, half horse and half man. In support of this theory, it may be said that the Aztecs of Mexico were much astonished by the appearance of Cortez's cavalry. Until they saw the men dismount, they thought that horse and rider constituted a two-headed animal. The Centaurs were admitted to social intercourse by the Greeks. At one time they were invited to a marriage, but, becoming intoxicated, they were rude to the bride, and a pitched battle followed. The conflict between the Centaurs and the Greeks is a favorite subject with sculptors and poets of antiquity. Chiron was the most noted of the Centaurs. He was instructed by Apollo and Diana in the mysteries of medicine and music and in the art of prophecy. The Centaurs are represented in art as having the body and legs

of a horse. The neck and head of the horse are replaced by the body of a man from the waist upward. See CHIRON.

Centennial Exhibition, a celebrated World's Fair held in Fairmont Park, Philadelphia, May to November, in 1876. It was held during the one hundredth or centennial year of American Independence. Citizens of the city of Philadelphia gave over $4,000,000 toward expenses to which the national government added $1,500,000, and expended $500,000 on a government building. Twenty-six states erected buildings. In all over 200 separate buildings were arranged on the grounds. Over 50,000 awards were made for excellence of exhibits. Forty-nine foreign countries made exhibits. Though surpassed by subsequent efforts, the exhibition was the greatest affair of the sort, in fact, it was the first great exhibition held in America. The skilled manufacturers of the Old World were well represented, and this country ransacked field, forest, mine, and factory to make a good showing. The exhibit made by Japan was a surprise.

Americans learned a great deal from the articles on exhibition. Makers of pottery, glassware, furniture, calico, ribbons, mirrors, wall paper, and a thousand other articles of household use began to improve their patterns under the influence of European models. Printers, engravers, and wood finishers and makers of fine cabinet work were stirred up to equal or surpass the work seen at Philadelphia. The American bicycle was suggested by English wheels. About 8,000,000 fifty cent tickets were taken up at the gates. Although the cost of the exhibition was not recovered directly, nor even the half of it, the wonderful influence exerted on the manufacturers, decorators, designers, artists, schools, and the people at large—the awakening to the fact that America had so much to learn—is considered worth many times what the exhibition cost.

Many eminent Europeans visited and participated in scientific and other conferences. The Bell telephone was on exhibition for the first time. Machinery Hall, filled with inventions, together with the minerals and agricultural productions, woods, and fruits, gave European visitors respect for American inventive ability and for the future of the nation. The standing of the United States abroad was improved noticeably.

Center of Gravity, the point within a body at which it must be supported in order to balance. It is the point of application of the resultant of all the parallel forces representing the attraction of the earth for each particle of matter in the body. If a body is suspended from two points successively, the intersection of the lines connecting the points of support with the center of the earth, will give the center of gravity. The stability of a body depends upon its center of gravity being low, the line of direction, as above, falling well within the base.

Center of Population in the United States. The center of population would be the geographical center if the country were peopled uniformly. When the first census was taken in 1790 the center of population was a point near the Atlantic coast twenty-three miles east of Baltimore. By 1800 it had moved forty-one miles, to a point eighteen miles west of Baltimore. Ten years later it had traveled thirty-six miles farther westward, to a point northwest of Washington, D. C. During the next thirty years it traveled westward through West Virginia. In 1860 it was twenty miles south of Chillicothe, Ohio. In 1870 it was forty-eight miles east of Cincinnati, and in 1880 eight miles west of that city. In 1890 it was twenty miles east of Columbus, Indiana, and in 1900, the center was located six miles southeast of the same city. In 1910 it had moved almost due west 39 miles, and was in the city of Bloomington, Indiana. In 1920 it was in the town of Whitehall, Indiana, eight miles west of Bloomington. The western gain varies from fourteen to eighty-one miles per decade. The greatest gain was made between 1850 and 1860; the least, between 1910 and 1920. During the last decade it moved nearly twice as far as in the preceding, due to the rapid growth of the Pacific northwest and the middle southwest. The center of the negro population, calculated separately, is near Rome, Georgia.

Centipede, sĕn′tĭ-pēd, a class of animals allied to insects and crustacea. The centipede has a worm-shaped body of from 6 to 200 segments, with a head distinctly separated from the body by a neck. Each segment has a pair of legs, and the head bears a pair of antennae. Centipede means having one hundred feet. The millipede, or thousand legged worm, differs chiefly in having two pairs of legs on each segment, a body less flattened, and shorter antennae. The centipede lives on insects; the millipede on decaying wood. Our northern species are harmless. The centipede is useful in houses. It springs upon waterbugs and other insects, holding them down with its numerous legs until it has sucked the life out of them.

The California centipede is from five to eight inches in length. It has twenty-two segments—twenty-two pairs of legs. Each "leg" ends in a sharp point. When angered the animal clasps its victim, driving all forty-four points into the flesh, stinging as if with hot needles. Boys mount and sell them as curiosities.

Central America, that part of North America lying south of Mexico.

Central Park, the name of a public pleasure ground in New York. It comprises 840 acres. The site was purchased in 1856 and subsequently at a cost of over $7,000,000. Thirty million dollars have been expended in converting a swampy, rocky district of pigsties and shanties into lawns, drives, fountains, and ponds. Two million dollars will not more than cover the cost alone of bringing in good soil from Long Island. When laid out the park was a northern suburb of the city, but it is now quite central and is a delightful breathing place in the New World metropolis. The original park contained 150,000 shrubs and trees, including some twenty kinds of maple, beech, chestnut, birch, walnut, oak, elm, poplar, sycamore, catalpa, etc. They were protected and many have now grown to be fine, shady trees. The main drives are a lively sight on pleasant afternoons, when the gay turnouts of wealth and fashion pass so rapidly and in such numbers that one can hardly count them. Seats and shady walks are provided for foot passengers. Fine collections of palms, orchids, and other interesting flowers and plants are cared for under glass and in well kept gardens. Numerous dens, caves and cages, tanks, and wire enclosures confine all sorts of birds, fishes, and wild animals, from a beaver to a polar bear, or a jackrabbit to a giraffe. The general plan of the park was designed by Frederick Law Olmsted in 1857. It has been adhered to, in the main, ever since. The Metropolitan Museum of Art and the American Museum of Natural History are handsomely housed in the park. Under the directorship of William T. Hornaday, a collection of wild animals has been formed, scarce second to any other in the world.

Centrifugal Force. When a body is swung in a circle by a string, a constant force must be exerted to hold it in its curved path. This is called centripetal force. The reaction to this, the tendency to fly off, represented by the pull on the string, is called centrifugal force. The pull increases with the weight of the body, the speed of rotation, or with the shortening of the string. The principle of centrifugal force is utilized in mechanical dryers for laundry purposes and for the separation of liquids of different densities, as in the cream separator.

Century Plant. See AGAVE.

Cephalopod, sĕf′ă-lo-pŏd, in natural history, a term applied to any mollusk belonging to the class represented by the squid, cuttlefish, octopus, nautilus, argonaut, etc. The term is Greek, meaning head-footed. Cephalopods are without the corresponding foot or disk of the clam and other mollusks. Instead of this foot they have eight or ten arms or tentacles borne in a ring around the mouth. Hence the name. See CUTTLEFISH; SQUID.

Ceramics, sē-răm′ĭks, or **Keramics,** a word from the Greek meaning "potter's earth." It has several significations. As a collective term it designates objects made from clay, or natural earth, or from an artificial mixture of earths and minerals, and baked to insure hardness and durability. In this sense the word ceramics, includes all pottery, porcelain, earthen ware, stone ware, china ware, brick, tile,

etc. The art of producing such objects is called also ceramics or the ceramic art, the oldest of all arts.

Ceramics is a word of some dignity and seems to belong rather to the fine arts than to the useful. We find the word in most common use among Arts and Crafts Societies, Craftsmen's Guilds and the like, whose members make much of the study of ceramics. Their work in this line is artistic and beautiful and is by no means confined to decorating pottery, but includes the designing of forms and the actual shaping of the articles. See POTTERY; CLAY; PORCELAIN; BRICK.

Cerberus, ser'bē-rŭs, in the mythology of the ancients, the watch dog of the infernal regions. He is represented generally with three heads, the central one more or less human in appearance, with the tail of a serpent and with serpents coiled around his fore legs, body, and neck. See HERCULES.

Cerebrum. See BRAIN.

Cereals, a term derived from Ceres, the goddess of corn. Beans, peas, and lentils are sometimes included among the cereals, but, properly speaking, the term is confined to the flour- and meal-producing seeds of plants belonging to the grass family. The eight prominent cereals of North America are Indian corn or maize, wheat, rye, oats, barley, buckwheat, rice, and Kaffir corn. They furnish the larger part of human food. Speltz and millet may be added to the list. Buckwheat is not a grass, but is included usually because of its use as buckwheat flour. The following tables are arranged from the last United States Census Report and are representative:

Grain	Acres	Bushels per acre
Barley	7,698,706	22.7
Buckwheat	878,048	16.9
Corn	98,382,665	25.9
Kaffir Corn	1,635,153	10.7
Oats	35,159,441	28.9
Rice	610,175	35.8
Rye	2,195,561	13.4
Wheat	44,262,592	15.4
All Cereals	189,822,341	

Grain	Bushels	Value
Barley	173,344,212	$92,458,571
Buckwheat	14,849,332	9,330,592
Corn	2,552,189,630	1,483,553,919
Kaffir Corn	17,597,305	10,816,940
Oats	1,007,142,980	414,697,422
Rice	21,838,580	16,019,607
Rye	29,520,457	20,421,812
Wheat	683,379,259	657,656,801
All Cereals	4,599,861,755	$2,704,955,664

See AGRICULTURE.

Ceres, sē'rēz, in Roman mythology, the goddess of grain and harvest, whence the term, cereal. No special myth seems to have been attached to her worship until the fifth century, when the Romans identified with her the Greek Demeter, introducing from Sicily the rites of worship performed in honor of the Greek goddess. They also adopted the Greek myths connected with Demeter, especially that of Persephone, the Roman Proserpine. See DEMETER

Cereus. See CACTUS.

Cervantes, ser-văn'tēs, **Miguel** (1547-1616), a Spanish poet and story writer. His parents were people of moderate means. He became a page in the family of a cardinal at Rome. He served in the war of 1570 against the Turks, and is said to have been held as a slave in Algiers for seven years. To raise money for his ransom his father sold all his possessions, and his two sisters gave up their marriage portions. In 1580 he was thus ransomed and returned to Spain. He gave the rest of his life to literature. He is known chiefly as the author of *Don Quixote,* a two volume novel that has been translated into almost as many languages as *Robinson Crusoe.* In Cervantes' day Spain was overrun by improbable stories of knightly adventure which formed the theme of almost all romances. Young and old devoured strange tales. The effect on young people was a good deal like that produced at the present time by our yellow-backed literature dealing with robbers and Indians. Cervantes had in mind to "render abhorred of men the false and absurd stories contained in books of chivalry." He threw so much ridicule on this class of writing that such romances became unpopular and disappeared from view. *Don Quixote* is a piece of brilliant caricature. Its immediate influence is considered the most remarkable in all literature. Don Quixote is a country gentleman who sets out with h

squire, Sancho Panza, to see the world and lend a hand in its reform. One of his first adventures was running atilt into a windmill. His shiftless servant, Sancho Panza, and his horse, Rocinante, have a permanent place in literature.

Cervantes lived for the greater part of his life in misery, little relieved by the success of his famous *Don Quixote,* which brought more fame than money. The secretary of the archbishop of Toledo, in his approbation appended to the second part of this novel, says that foreigners of distinction visiting Madrid inquired first of all for the author of *Don Quixote;* that he was obliged to reply that "he who had made all the world rich was poor and infirm, though a soldier and a gentleman." A few days before his death, he entered the order of Franciscan friars. He died in poverty, but serene and cheerful, on the same day as Shakespeare, April 23, 1616. His body was buried in the convent of the Trinitarian nuns, of which community his daughter was a member. In 1633 the nuns moved to a new site and their dead were exhumed and deposited in a common ossuary or bone heap. The last resting place of the greatest name in Spanish literature is, therefore, unknown.

See Don Quixote.

SAYINGS OF CERVANTES.

Live and learn.
All in good time.
This peck of troubles.
As secret as the grave.
A finger in every pie.
Honesty is the best policy.
The pot calls the kettle black.
Within a stone's throw of it.
The proof of the pudding is the eating.
My thoughts ran a wool-gathering.
Why do you lead me a wild goose chase?
Spare your breath to cool your porridge.

SAID OF CERVANTES.

Cervantes smil'd Spain's chivalry away.—Byron.

His record was as glorious and as calamitous as any in literary history. He was one of the world's greatest benefactors whom the world knew not—the best of all Spaniards, the very type and embodiment of the highest Castilian nature, whom his country starved and who made her immortal.—Henry Edward Watts.

Cervantes is the father of the modern novel, in so far as it has become a study and delineation of character instead of being a narrative seeking to interest by situation and incident.—Lowell.

Cetacea, se-tā′she-ȧ, warm-blooded, four-legged animals that have become fish-like in form. In some respects they resemble the seal and the walrus, but they have become still more degenerate through disuse of their legs on land. It is difficult to believe that a whale was originally a four-legged land animal suckling its young; but such, scientists tell us, is the case. The cetacea include the various whalebone or baleen whales, the sperm whales, the dolphins, the porpoises, the so-called blackfish, the grampus, the killer, the herring hog, and the narwhal. See Whale; Porpoise, etc.

Ceylon, sē-lŏn′, a large Asiatic island. It is a crown colony of the British Empire. Area, 25,332 square miles. It lies in the Indian Ocean. It is really a continuation of the peninsula of Hindustan, with which it is connected by a scantily covered, rocky reef, called Adam's Bridge. The island possesses an ancient civilization, whose annals reach backward twenty-four centuries. Its ancient capital covered 256 square miles, and was inclosed by a wall 64 miles in length. It was the center of an ancient cult of Buddha. A sacred botree was here. The Portuguese colonized Ceylon in 1517. In 1658 Ceylon was wrested from them by the Dutch. In 1802 it was ceded by Holland to England.

The coast is level and fertile, the interior mountainous, and rises to a height of 8,000 feet. A well built highway encircles the entire island. Travel is interrupted, however, by swollen streams during seasons of inundation. Although the rainfall is enormous, 89 to 217 inches yearly, the rains are confined to the short period of monsoons. At other seasons the drought is severe and prolonged. Enormous storage reservoirs and extensive irrigating systems are necessary to save the crops. There are no less than 5,000 reservoirs now in use. Some were built 500 years before the birth of Christ. One modern dam is 11 miles long and cost over $6,000,000. Another embankment is from 40 to 90 feet high for a distance of 24 miles.

As might be expected from its latitude the climate of Ceylon is hot. The jungles are malarious. A list of the island animals

includes the elephant, now protected by government, bears, buffaloes, monkeys, swine, deer, leopards, jackals, porcupines, flying squirrels, bats, the mongoose, and rats innumerable; of game birds, pheasants, peacocks, partridges, pigeons, and snipe are found. The coasts swarm with crocodiles, serpents, and other reptiles. Rice, tea, coffee, cinnamon, and cocoanuts are raised in abundance. The mountains yield various metals, including nickel, cobalt, copper, tin, coal, platinum, iron, and plumbago. There are over 3,000 gem quarries. Naturally enough, the bulk of the trade is with England. The great London warehouses receive cargoes of Ceylon tea, cocoanut oil, gems, cinnamon, plumbago, rubber, cacao, tobacco, spices, and coffee. They send back cotton cloth, tools, and machinery. The business amounts to from $30,000,000 to $50,000,000 a year.

The population in 1910 was about 4,000,000, 16,000 of whom were Europeans. The pearl fisheries are mentioned elsewhere. Colombo is the capital.

See PEARL; IRRIGATION.

Chain, a series of metal links fitted into one another to form a line. The links are of many forms, elliptical being the most common. The size of the wire or bar which forms the link, the size of the separate links, the metal chosen, all depend upon the purpose for which the chain is to be used. These purposes are endless, from the slenderest gold chain formed of the finest wire, through all grades of chains for personal adornment or for other ornamental purposes, up to the heaviest of steel and iron chains used for ships' cables and for conveying power in machinery. Chains are made in a variety of ways. The most common method of making iron chains consists in cutting iron bars into lengths required for separate links then each link is heated to a forging temperature, shaped and welded by hand, the welding in each instance being preceded by the introduction of the adjacent link of the chain. Steel chains are made often by machinery, the steel being rolled into bars of the required width and thickness, and the metal cut away by the machine, leaving the links, just as one cuts away wood to leave links in making a wooden chain. Just as a fine chain is stronger in proportion to its size than a large one, so a fine chain, if the material and the method of making are the same, is proportionately stronger than a large one.

Chair, a piece of furniture. The essential part is a seat. It also has legs, a back, and frequently arms. Without a back a chair becomes a stool. Chairs were known among the Romans. Richly carved wooden chairs are heirlooms in the great German houses. Nothing seems more common than a chair. It is safe to assert, however, that three-fourths of the world's population do not use chairs, but sit on mats or on the ground, at table and when resting. The sense of dignity formerly attached to the occupancy of a chair may be traced in the use of the term in connection with a professorship, as the chair of modern history, the chair of Latin, etc. The one called upon to preside over a meeting is said to take the chair. A speaker addresses the chair. The head of a committee is called its chairman. See FURNITURE.

Chalcedony, kăl-sĕd'o-ny, a precious stone found first in the ancient Greek town of Chalcedon in Asia Minor nearly opposite Constantinople. It is an amorphous form of quartz, having a milky color, more or less clouded with veins, circles, and spots. It is used in the manufacture of jewelry. Like the agate, to which it is closely related, chalcedony often contains stains resembling bits of petrified moss or plants. Sometimes pebbles contain a drop of water. Fine specimens are obtained from the centers of basaltic rocks in Scotland, Ireland, Iceland, and the Rocky Mountains. A white chalcedony containing small blood-red spots is called St. Stephen's stone. At one time chalcedony was used much more and was more highly prized than at the present time. It was employed not only for seals and rings, but also for plates, cups, and vases. These were often engraved in the most elaborate manner. See QUARTZ; SAND; AGATE.

Chaldea, kăl-dē'a, in the narrow sense of the word, a province of ancient Baby-

lonia, situated in the southern part of that country, along the Persian Gulf. In a broader sense, the word is used to designate the whole country of Babylonia, and even the Babylonian Empire as it existed after the Conquests of Nebuchadnezzar, although it is more properly applied to the early Babylonian Monarchy.

The earliest inhabitants of Chaldea or Babylonia are known as Akkadians or Accadians. They belonged to the Turanian family of mankind and developed, possibly before their immigration into the Euphrates valley, the elements of civilization. Among them, and conquering them, came, not later than 5000 B. C. a nomadic people of the Semitic family. The gradual union of these races with doubtless the admixture of other elements resulted in the Chaldeans or Babylonians of history. Of the various districts or provinces of the region, Chaldea was one which through all vicissitudes retained to a large extent its independence. Often Chaldean kings ruled the whole country. "Ur of the Chaldees" was the capital city at an early date, and thus Chaldea gave its name to the nation and to the early civilization that developed in the Tigris-Euphrates basin.

The Chaldeans were fond of peaceful pursuits, and dwelling in the rich alluvial district of the Euphrates basin were able to give time to something beside gaining a subsistence. The beginning of civilization made by the Accadians was turned to good account by the Semitic peoples. They adapted the cuneiform writing to their own language and it is believed that a large number of people, even the women, could read and write. Every city had at least one library of tablets and these show that progress was made in many of the arts and sciences. Various schools of literature existed, and besides poetical writings the libraries contained works on geography, arithmetic, geometry, grammar, astrology, astronomy, mythology, divination, and religion.

Although their country furnished them with no building stone, the Chaldeans made sun-dried bricks and achieved a considerable degree of skill in architecture, which, however, like that of Egypt, is more noteworthy for its vast extent and its grandeur than for any real beauty. About 2300 B. C. Babylon came into prominence, succeeding Ur as the seat of government. The Kassites from Elam made conquests in Babylonia and the Kassite dynasty reigned for several centuries. In the thirteenth century B. C. occurred the Assyrian Conquest. In 625 B. C. Babylonia again became a great power, under Nabopolassar. After that date the term Babylonia is more common than Chaldea to designate the empire. Chaldean quite as commonly describes the ancient civilization, of both early and later empires, as does the adjective Babylonian.

The word Chaldeans is used sometimes specifically to designate the learned or priestly class in Babylonia. In this sense it corresponds to Magi, or wise men. The story of Daniel in the Old Testament book of that name tells how the Chaldeans were called upon by Nebuchadnezzar to interpret a dream which he had forgotten and were threatened with death unless they should comply with the request. See BABYLONIA; BABYLON; NEBUCHADNEZZAR.

Chalk, a soft white rock or earth. Chemically considered chalk is a carbonate of lime. It is formed under water by the accumulation and disintegration of tiny shells of myriads of microscopic animals. If waters are undisturbed for ages these deposits of chalk obtain great thickness, when changes in the earth's surface may bring them above the ocean to form part of a continent. The geologic period during which the great chalk beds were laid down is called the Cretaceous Age. Deep sea dredgings show that a fine white ooze is being formed now at the bottom of the ocean in a way probably very similar to that in which chalk was formed. Chalk formations usually contain fossils of seaweeds, sponges, corals, mollusks, fishes, and reptiles.

One notable chalk deposit may be followed from Austin, Texas, southwestward into Mexico. One ledge, no less than 600 feet in thickness, may be traced for 250 miles. The best known chalk formation reaches from northern France into the southern parts of England and Ireland.

Chalk cliffs border both shores of the English Channel. The high, white cliffs of Ireland, with their green carpet above, are the first land that greets the eye of the American bound for Liverpool.

Chalk lacks the fertility of lime, but is used in England to dress fields deficient in the latter. It holds water well, making an excellent subsoil. It is much used in making cement, in sizing some kinds of cloth, and small quantities are molded into cylinders or crayons for blackboard use. The whiting used by the calciminer is a refined chalk. The so-called red chalk, the "keel" found by boys in clay banks, is a kind of clay stained with iron. In medicine purified chalk is administered as a remedy for an acid stomach. Such expressions as "chalk up," "by a long chalk," etc., arise from the use of chalk in keeping accounts. See LIME; GYPSUM.

Challenger Expedition, in the annals of science, an exploring expedition undertaken 1872-76 for the purpose of making deep-sea soundings. The Challenger was a British man-o'-war under command of naval officers. It carried a full equipment of apparatus for the investigation of ocean phenomena. It carried also a party of scientists. The good ship steamed 70,000 miles and was gone three and a half years. The expedition crossed the Atlantic, by way of the Canaries, Madeira, and the West Indies, to Nova Scotia. Thence the route lay south to the Cape Verde Islands, and on around the world, *via* Cape of Good Hope, Australia, China, Japan, Chile, Strait of Magellan, and home to England again. The ocean was dredged for ooze, dragged with nets for fish, and sounded with plummets for depth. Hitherto unknown oceanic plateaus, currents, submerged volcanoes, depths, and precipices were discovered. Thousands of specimens of odd animals, previously unseen by man, were brought up by the dredge and preserved in glass jars. Professor Wyville Thompson and his assistants brought home an immense amount of scientific material, and information charts were made of the oceanic floor, currents, and winds. The fauna, flora, and life conditions of the deep sea were studied as never before.

The results of the investigation were published, under the supervision of Sir John Murray, in fifty royal octavo volumes, with 29,000 pages, 2,000 plates, and a large number of maps and pictures. One of the results is a physical map of the bottom of the oceans. From the top of Mount Everest in Asia to the bottom of Aldrich Deep in the Pacific Ocean is a drop of more than ten miles. The results of the expedition also seem to substantiate the belief that animal life originated on land and not in the sea; that the sea is peopled with degenerate land animals; the further from shore and the deeper the sea, the more degenerate, sightless, colorless, and grotesque are the forms of life. The action of cold currents occasionally changes the temperature of deep sea localities so remarkably as to kill off sea animals, which may, in such cases, cover the sea bottom for leagues with their dead bodies.

The information gathered has been used freely by writers of physical geography. Among the results of the expedition were measurements of the greatest depth of the oceans. The depths are given in feet:

Atlantic	27,366
Pacific	30,000
Indian	18,582
Arctic	9,000
Southern	25,200

Challis, shăl'ly, a soft, fine, thin dress fabric of wool, wool and silk, or wool and cotton. The original challis was made at Norwich, England, in 1832. It was of silk and wool, and was of a superior quality, the special characteristics being lightness, pliability, and dull finish. Challis is made in plain colors or figured. The patterns are copied usually from French silk. They are tasteful and often artistic. They are produced in the loom or are printed. Cotton challis is one of the cheapest prints made. It is, however, soft, durable, and attractive in coloring. It is used largely for bed comforts, draperies, house gowns, dressing sacques, etc. All wool challis is quite similar to old-fashioned muslin-delaine. It is not crumpled easily, and is desirable where light weight, dainty coloring, and graceful draping are required. See DELAINE.

Chalmers, Thomas (1780-1847), a Scottish clergyman. He was a native of Fifeshire, and a graduate of the University of St. Andrews. He entered the Presbyterian ministry and became noted as a pulpit orator and a writer. He did a great work in Glasgow in alleviating the distress of the poor. In 1827 he was appointed to the chair of divinity in the University of Edinburgh. In church affairs of Scotland Chalmers ranks second only to John Knox. In 1843 he was the leader of the Free Church party that refused state help and state interference in the management of churches. This, of course, cost him his University position. He wrote a vast number of tracts, sermons, and books in defense of Free Church principles. Summed up, his life may be said to have been devoted to practical work and to the establishment in Scotland of the principle that church and state should be separate. See PRESBYTERIANS.

Chalybeate (kā-lĭb′e-āt) **Springs,** springs whose waters contain salts of iron in sufficient quantity to be of medicinal value. Iron is a necessary part of blood; therefore such waters have a beneficial effect on thin blood. The presence of iron is indicated frequently by its giving the soil along the outlet a reddish tinge. There are two principal kinds of chalybeate water—carbonated and sulphated. The carbonated contains an excess of carbon dioxide. The most noted of these springs in this country are those of Saratoga, New York. There are springs of note also at Cheltenham, Harrowgate, Bath, and Tunbridge, England; at Kissingen and Spa on the continent. The Black Forest contains several; others are found in Switzerland, Corsica, and Italy. The sulphated water contains iron sulphate. Springs are found in the Isle of Wight and other places. See WATERS, MINERAL.

Chamber of Commerce, an association of merchants and others with a view to promote the business interests of the town. Most American cities have such an organization. The newspapers contain daily items relative to their efforts in the line of favorable railroad rates, the establishment of manufactures, the reception of distinguished visitors, contributions to sufferers from great disasters, and the like. A committee from a chamber of commerce representing the united commercial interests of a city has more influence than that the same men exercise if acting on their own responsibility.

UNITED STATES. The Chamber of Commerce of the United States was organized in 1912. Its membership consists of members of local chambers of commerce and other business men's associations. Its operations have a national scope and reports of its activities are made regularly to the membership. Its headquarters are in Washington, D. C.

Chamberlain, Joseph (1836-1912), a prominent English statesman, born in London. His education was received in private schools and University College, London, from which he received the degrees of LL. D. and D. C. L. During the first of his political career he was a decided Radical, but in 1886 opposed Mr. Gladstone, his chief, on the subject of Irish rule, and sided with the Conservatives. Previous to this he had served three times as mayor of Birmingham, and had represented the city in Parliament for ten years. He became colonial secretary in 1895, and in 1899 found himself fully occupied with the Boer War. In 1903 he aroused an interest extending far beyond the borders of Great Britain, by advocating an entire change in England's financial policy including a system of preferential tariffs. He has always advocated municipal reform and has been active in the betterment of the working classes. His seventieth birthday, and the end of thirty years' service as a member of Parliament from Birmingham were celebrated in 1906.

Chambers, Robert William (1865-), an American novelist and illustrator, born in Brooklyn. He studied in the Julien Academy, Paris, and later illustrated for *Life, Truth, Vogue* and other New York periodicals. His first stories appeared in 1893 and his literary work has continued since that time without interruption. His *Restless Sex* was advertised as his forty-eighth book. His stories deal with the social phases of society and he has frankly

depicted some of the baser aspects of modern life. Among his best known works are *The Fighting Chance, The Firing Line, Ailsa Page, The Common Law, The Business of Life, The Girl Phillipa, Barbarians, Athalie.*

Chambers, William and Robert, two Scottish brothers, well known as publishers and writers. They were born at Peebles, Scotland; William, in 1800, Robert in 1802. They both died at Edinburgh; Robert in 1871, William in 1883. Robert was designed for the church, but his parents were unable to give him the necessary education. Although poor, the family possessed a few books, among them a copy of the first edition of the *Encyclopedia Britannica.* There was also a small circulating library in the town. The brothers made all possible use of these books. The family removed to Edinburgh while the boys were still quite young. At the

The brothers issued penny leaflets of useful information for the people, written in a clear, pleasing style. These became popular, and led to the establishment by William in 1832 of a regular periodical, *Chambers's Journal.* Robert soon became joint editor, and wrote nearly all of the leading articles. *Traditions of Edinburgh* was the first published work which brought him into general notice. Thereafter, either alone or conjointly with his brother, he wrote and compiled a large number of works relative to the antiquities, history, literature, and industries of Scotland. His most important works are *Life of Robert Burns* in four volumes, *A Cyclopedia of English Literature, The Book of Days,* and *Domestic Annals of Scotland. Chambers's Encyclopedia for the People* was an outgrowth of the *Journal,* and was edited by the brothers.

William Chambers, besides the work done in connection with Robert, published several books on various subjects. *Things as They Are in America, American Slavery and Color,* and *France: Its History and Revolution* are among them. Both broth-

Chambray, shăm′brā, a superior quality of gingham woven in plain colors, and usually without pattern. The blended appearance which is a characteristic of chambray is produced by the use of colored warps and white weft. Chambray is woven of finer yarns than ordinary gingham. A coarser variety is known as chambray gingham. When taken from the loom, chambray is starched heavily and calendered. A Jacquard chambray is a figured chambray produced by an arrangement which allows the weft to skip certain warp threads at regular intervals. In calendering a Jacquard chambray is finished by a method which gives it the gloss, general appearance and feeling of linen. See GINGHAM; CALENDERING; JACQUARD; LINEN.

Chameleon, kà-mē′le-ŭn, a lizard-like animal. The common chameleon of Europe is six to eight inches long, with large, humpy shoulders, a thick neck, and a large head. One large fold of skin crosses the nape of the neck, another follows the spine, and a third takes the direction of a dewlap. Five toes on each foot are divided into two groups, two pointing one way and three the other, so that each foot may be used as a hand. This arrangement, together with a prehensile tail, enables the chameleon to climb about the limbs of trees in a cautious, sluggish manner. A way the chameleon has of gulping, and the fact that it will sit for an incredible time without food, led the ancients to suppose it lived on air. This curious animal cannot bend its neck, but it has two prominent eyes that turn in every direction in a comical way, independently of each other. The eye is covered by a single eyelid, having a hole in the center. It is doubtful whether the chameleon fasts as long as is popularly supposed; for, on the approach of an insect, it shoots out a long, sticky tongue with incredible swiftness, and in the twinkling of an eye transfers the luckless insect to its mouth.

The chameleon, like many other animals, has two differently colored layers of pigment, or coloring matter, in its skin. Under the influence of light, fear, or anger, or possibly at will, the color of the chameleon changes so as to resemble a gray limb or green foliage as the case may be, and render the animal less noticeable.

American chameleons, found in the pine woods from Tennessee southward to Cuba,

are smaller active animals, grass green in color. They change from gray to yellowish, bronze, and even black. Fastened by a collar and a delicate golden chain, women wear them as ornaments. They are true lizards, not chameleons.

See LIZARD.

Chamois, shăm′my, an animal occupying a position midway between the goat and the antelope. It is found in the Pyrenees, the Alps, and in the Caucasus Mountains, eastward to Persia. It is about as large as a well grown goat, but it is somewhat lighter and more graceful in structure. The general color is brown, with a pale yellowish head and a black tail. Two black horns, four or five inches in length, have straight shafts, and are recurved at the point until the tip points directly downward. The chamois is best known in the Alps, where, however, it has been hunted so persistently that the few remaining specimens are protected by law. It lives above the timber line in summer, but descends with its fawn into the upper forests for the winter.

The chamois is a remarkably agile, surefooted animal, and can leap a wall twice the height of a man's head with the utmost ease, or spring across a chasm fifteen feet in width without apparent exertion. It can also rise out of a chasm or descend to the bottom of one by a peculiar series of leaps. It stands with its body parallel, that is, with its sides to the faces of the chasm, and, by a series of side bounds, plants its flinty hoofs, first against one face, then against the other face, of the rock back and forth, thus rising to the top or descending to the bottom of a deep cleft without the least inconvenience. Throughout the series of jumps the body is held easily rigid. All four hoofs are flung out first on one side, then on the other, against the opposing rock without the least appearance of effort or embarrassment. Should a ledge be encountered wide enough, the chamois pauses, feeds, and resumes its upward or downward trip. By this method of bounding from surface to surface, a chamois can scale the inner angle of a garden wall.

See GOAT; ANTELOPE.

Chamouni, shä-mōō-nē′, a picturesque vale in Switzerland. Politically it lies in Savoy, a province of France. Geographically it is a part of the upper valley of the river Arve. It is about twelve miles in length. It runs toward the southwest. Mount Blanc towers on one side, and a lofty, precipitous mountain bounds it on the other. The name is derived from the chamois or wild goat. The valley receives several glaciers, chief among which is the noted Mer de Glace, or sea of ice from the shoulder of Mount Blanc. The village of Chamouni, magnificently situated in full view of the great mountain, has a large summer population of tourists. In the winter the natives, about 2,500 in number, settle down to spinning, toymaking, carving, preparing alpenstocks, and getting ready in other ways for a summer tourist trade. The soil of the valley is scanty, but is carefully tilled. Colonies of bees gather mountain honey. See BLANC; SWITZERLAND.

Champs Elysees, shŏn′zā-le-zā′, a celebrated public park and promenade in Paris. It is on the north bank of the river and extends from the Place de la Concorde to the Place de l'Etoile. The avenue is lined with beautiful trees and fine buildings. The name means Elysian fields. See PARIS; ELYSIUM.

Champagne, shăm-pān′, an ancient province of France. Its frontier lies east of Paris at a distance of perhaps fifty miles. It was incorporated with France about 1361. Troyes was its capital. It is celebrated for the sparkling red and white wines of the name, especially those produced on the banks of the Marne. Growers press four and one-half pounds of grapes to a quart of champagne. By a law of France the name champagne is restricted to wine produced in a district of about forty-five square miles in the immediate vicinity of Rheims. See WINE; RHEIMS; BURGUNDY.

Champion, one who takes up the cause of another. During the Middle Ages one accused of foul crime had the right of trial by combat. He could fight for himself, or be defended by a champion who fought for him against the accusing party

or representative of the accuser. The practice was sanctioned by the church, the theory being that a weak arm was nerved and a strong arm made stronger by a sense of right, and that the God of Battles would not suffer the wrong to prevail. A thrilling account of this practice may be found in Scott's *Ivanhoe*. Rebecca, the beautiful Jewess of York, was accused of sorcery. Wilfred of Ivanhoe, wounded and faint, rode into the lists amid cries of "A champion! A champion!" Sir Brian de Bois Guilbert, a powerful knight, likewise in full armor and superbly mounted, took his station at the other end of the lists. The herald summoned them thrice to do their duty. The Grand Master dropped the glove and said, "Let go." The knights charged like thunderbolts. Their lances struck fair. The foul Bois Guilbert reeled, fell from his saddle, died of apoplexy, "a victim to the violence of his own contending passions." Rebecca was saved. As these trials did not have always a novelist to bring them to a righteous issue, we must believe that much injustice was done by the strong to the weak. See ORDEAL.

Champlain, Samuel de (1570-1635), a French soldier and explorer. He was born in France and died at Quebec. He served under the French flag in the West Indies and Mexico. In 1603 he began the exploration of the St. Lawrence. In 1608 he founded Quebec, and in the following year discovered the lake which bears his name. He spent his life in the service of France, fighting the Iroquois, fortifying Quebec, locating settlers, and developing the fur trade of New France.

Champlain (shăm-plāne′) **Lake,** a beautiful body of water lying between Vermont and New York. It lies 90 feet above the sea. It is about 110 miles in length and is from 10 to 12 miles in width at the northern end. It discharges its waters northward, through the Richelieu or Sorel River, into the St. Lawrence. The lake is studded with half a hundred islands, which, with numerous wooded promontories, form attractive resorts and places of summer residence. The waters abound in fish. Numerous steamers ply on the lake. Burlington is the chief port. The lake was discovered by Samuel Champlain in 1609. It formed part of the great canoe way between the St. Lawrence and the Hudson. The old portage is now cut by a canal. In 1776 the British defeated an American flotilla under Arnold. Burgoyne advanced up Lake Champlain to invade New York September 11, 1814. Captain McDonough with a small force met and defeated a squadron of sixteen British ships, carrying 96 guns and 1,000 men. The engagement took place near Plattsburg, and gave the Americans encouragement when they were in sore need of it. Of many writers who have dwelt on the scenery of the lake James Fenimore Cooper may be mentioned as the earliest.

Changeling, a child left in place of another. During the Middle Ages there was a popular superstition that the fairies were likely to take away a babe and place their own in its stead. The more vigorous a young child, the more likely the fairies were to desire it. The exchange might be made any time before the christening. Young babes were watched, therefore, closely, until that ceremony had been performed. A stunted, dwarfed, crippled, or underwitted child was believed commonly to be a changeling. Spenser speaks of changelings changed by "faeries' theft." The term is employed frequently by the British poets. Lowell, who lost a little daughter, uses the idea beautifully. He speaks of the memory of his little child as though it were a changeling left in its place by the angels.

> This child is not mine as the first was,
> I cannot sing it to rest,
> I cannot lift it up fatherly,
> And bless it upon my breast;
> Yet it lies in my little one's cradle,
> And sits in my little one's chair,
> And the light of the heaven she's gone to
> Transfigures its golden hair.

Channel Islands, a group of small islands in the English Channel ten miles off the coast of France. Area, 75 square miles. Population, 95,841. The principal islands are Alderney, Jersey, and Guernsey. They are famous for the fine dairy cattle bearing their names. The group was a part of French Normandy.

It came into possession of England with William the Norman at the time of the Norman conquest. England afterward lost the mainland of Normandy, but has retained these islands. The people still speak French, but are for the most part able to speak English. The islands have been permitted wisely to retain their old local forms of government and appear to have cared little who ruled the outside world. The Channel Islands are not bound by acts of Parliament unless specially named in them. The inhabitants are a hardy race of sailors and fishermen, with simple virtues such as are ascribed to the French settlers of Acadia in Longfellow's *Evangeline*. See BRITISH EMPIRE.

Channing, William Ellery (1780-1842), an American clergyman. He was a native of Newport, Rhode Island, and a graduate of Harvard College. He studied medicine, taught in Virginia, took up theology, and entered upon his first charge at Medford, Massachusetts. He preached his first sermon from the text, "Silver and gold have I none, but such as I have give I thee." In 1803 he had a call to Boston. In 1819 he preached a famous sermon in which he announced two articles of belief. He declared the Bible to be "a book written for men, in the language of men, and its meaning to be sought in the same manner as that of other books." He also declared his belief that Christ was a great moral teacher; no more, no less. This made him the recognized leader of the Unitarian movement in New England, a position which he held until his death. He was also an earnest advocate of the abolition of slavery, supporting the views of Garrison. He was a man of wide reading and a fine writer. His life was simple and fearless. He was a man of unaffected piety. He was respected thoroughly, even by those who could not accept his views. Coleridge said of Channing, "He has the love of wisdom, and the wisdom of love." A bronze statue of Channing stands in the public garden in Boston, opposite the church of which he was long a pastor. See UNITARIANS.

Channing, William Henry (1810-1884), an American clergyman. He was born in Boston, graduated from Harvard in 1829, entered the Unitarian ministry, preaching with much success in several American cities. He was a fine extemporaneous speaker. Later he settled in England as pastor of Hope Street Chapel in Liverpool. He was for two years chaplain of the Senate at Washington, but after the Civil War resided continuously in England. He published *Memoirs of Dr. William Ellery Channing, Life and Writings of James H. Perkins,* and, in connection with Ralph Waldo Emerson and James Freeman Clarke, *Memoirs of Madame Ossoli.*

To live content with small means—to seek elegance rather than luxury, and refinement rather than fashion—to be worthy, not respectable, and wealthy, not rich—to study hard, think quietly, talk gently, act frankly—to listen to stars and birds, to babes and sages, with open heart—to bear all cheerfully, do all bravely, await occasions, hurry never. In a word, to let the spiritual, unbidden and unconscious, grow up through the common. This is to be my symphony.—William Henry Channing.

Chanson de Roland, shon-sôn′ de rō-lon′, a French epic poem of medieval times. This poem seems, like other folk-epics, to be a collection or composite of popular songs. The Chanson de Gest (shon-sôn′ de zhest), literally song of heroic deeds, was a special form of narrative poem popular in France during the eleventh and twelfth centuries, corresponding to the ballads of old England. These songs were sung or recited by *trouvères* or minstrels. The *Chanson de Roland* is a cycle of these songs celebrating the heroic exploits of Charlemagne, and giving especially the story of Roland's death at Roncesvalles in 778, and the revenge taken by Charlemagne upon the Saracens. The French poem contains over 4,000 lines. This song of Roland, as the epic is commonly called, was the most popular heroic song of the Middle Ages. When on his way to conquer England William the Conqueror had parts of it sung at the head of his troops for the inspiration of his soldiers. The gathering together of this cycle of songs is accredited to Turoldus, a Norman *trouvère* of the eleventh century. Many of the songs date probably from a time little later than the event of Roland's

death. See ROLAND; EPIC; TROUVÈRE; BALLAD.

Chaos, kā′ŏs, in ancient mythology, that vast, infinite space out of which all things spring. "In the beginning," say the Scriptures; "Out of Chaos," say the Greek writers. The Roman Ovid represents chaos as a confused, shapeless mass out of which the universe or cosmos took shape. According to the Greek Hesiod Chaos was the mother of Erebus and Nox, darkness and night. Milton is fond of coupling night with chaos. Both quotations are from *Paradise Lost:*

The universal host up sent
A shout that tore hell's concave, and beyond
Frighted the reign of Chaos and old Night.

Where eldest Night
And Chaos, ancestors of Nature, hold
Eternal anarchy.

See MYTHOLOGY.

Chap Book, a rudely gotten up tract or pamphlet, such as was formerly sold by a chapman or peddler. The term chap, or cheap, originally meant a market, or fair. A chapman was one who sold articles at a public market, or cheap. Cheap wares were such inexpensive articles as were vended at the cheap. A chap book, therefore, is a market book, such as a market man might find suitable for rustic trade on a fair day. These chap books were at one time the only popular literature. They were printed in broad-faced, black type, adorned with a few rude woodcuts. They were printed on a single sheet of the coarsest paper and folded into twenty-four pages. They covered a vast range of subjects, including religious tracts, the lives of heroes and martyrs, dreams, fortune telling, almanacs of the weather, stories of giants, ghosts, hobgoblins, witches, notable events in history, ballads, and songs. They sold usually for a penny. They went out of fashion over a century ago. Being unbound they have become very scarce. They now command a large price as rarities. See BOOK; PRINTING.

Chapman, George (1557-1634), an English poet and dramatist. He studied both at Oxford and at Cambridge. Little is known of his history except that he went to London while a young man, was a friend of Shakespeare, Marlowe, and Edmund Spenser, and, it is supposed, held some office in connection with the court. His first poem, so far as is known, was published in 1594. From that time on, he produced many dramas, both comedies and tragedies; many poems, and, of more importance, many translations of classical works. Chapman was the earliest, and is regarded by many critics as the best, English translator of *The Iliad* and *The Odyssey.* He was associated with Jonson and Marston in the production of *Eastward Ho,* which satirized the Scotch in such a manner as to incur the resentment of James I. Chapman and Marston were imprisoned and Jonson voluntarily shared their confinement. Among Chapman's comedies may be mentioned *The Blind Beggar of Alexandria,* and among tragedies *Caesar and Pompey, Revenge for Honor,* and two dramas on the life of Marshal Biron, which Swinburne characterizes as "a storehouse of lofty thought and splendid verse, with scarcely a flash or sparkle of dramatic action."

QUOTATIONS FROM CHAPMAN.

Man is a torch borne in the wind; a dream
But of a shadow.

An ill weed grows apace.

They're only truly great who are truly good.

Young men think old men are fools; but old men know young men are fools.

'T is good to be merry and wise.

Enough 's as good as a feast.

Make ducks and drakes with shillings.

ON FIRST LOOKING INTO CHAPMAN'S HOMER.

Much have I travell'd in the realms of gold,
And many goodly states and kingdoms seen;
Round many western islands have I been
Which bards in fealty to Apollo hold.
Oft of one wide expanse had I been told
That deep-brow'd Homer ruled as his demesne:
Yet did I never breathe its pure serene
Till I heard Chapman speak out loud and bold:
Then felt I like some watcher of the skies
When a new planet swims into his ken.
—Keats.

"Chapman was a wise, manly, but irregular genius, greater as a translator of Homer than as a dramatist."

Chapultepec, chä-pool-tĕ-pĕc′, a rocky eminence about three miles from the city of Mexico. The name is said to be Aztec for "grasshopper hill." It rises about 150

feet above the surface. It was the county seat of the Aztec emperor Montezuma. A cypress grove at the western foot may yet be seen. The rock was fortified by the Spaniards. It was occupied by the Mexicans as a military academy, and was defended by a garrison. At the approach of the war between the United States and Mexico Chapultepec was relied upon to protect the road to the city from that quarter, and was defended pluckily by a garrison. It cost our invading army under General Winfield Scott three days and 863 killed and wounded to invest and take the place. The engagement took place September 12-13, 1847. Among the Americans engaged in planting batteries, pioneering, and scaling were many young soldiers whose names are well known. Some of these are Mayne Reid, George B. McClellan, Robert E. Lee, Stonewall Jackson, Raphael Semmes, Joseph E. Johnston, and James Longstreet.

Charade, shȧ-rād′, a sort of punning enigma. A word is chosen. Usually each syllable or letter is described in verse or prose as enigmatically as possible, and finally the whole word is described. A few examples may serve to make this description clear:

My *first* is company; my *second* shuns company; my *third* collects a company; my *whole* amuses company.

Answer. Co-nun-drum.

I am composed of four letters. My *last* is equal to my *whole* and my *whole* is nothing at all.

Answer. Zero.

My *first* is an article of furniture; my *second* is a grain; my *third* is what we all want. My *whole* is one of the United States.

Answer. Mat-ri-mony.

Some one threw my *first* and *second* at my *third,* but it did not hurt me for it was only a branch of my *whole.*

Answer. Mistletoe.

Of another sort is the acted charade. The players choose a word and act each syllable, or group of syllables, and finally act the entire word. The company endeavors to guess the word. Amost any device as dialogue, allusion, quotation, story telling, posing, and punning, is permissible. Words like catalog, Massachusetts, mandolin, Friday, Cinderella, antimony, silicate, sentinel, century, sirup, etc., are adapted to the purpose. Accurate syllabication is not insisted on. No twisting of meaning is considered too far-fetched for parlor charades. Sirup, for instance may be represented by a man standing on a chair (sir up).

Charcoal, a form of carbon obtained by burning vegetable or animal matter with a smothered fire. The bits of coal-black charred wood found in the ashes of a wood-stove or a campfire are charcoal. When we say a lamp is smoking, it is producing charcoal. Stir up a fire so that no bits of wood are smothered in ashes, and we shall have no charcoal. Supply more air, or turn down the wick so that oil will not come too fast for the air, and the lamp will cease to smoke; that is it will stop producing charcoal.

Wood-charcoal is hard and brittle and rings like a metal. It cannot be melted, nor dissolved in water. It burns without flame. It is not subject to decay. Many farmers char the lower ends of their fence posts to keep them from rotting off. Wood charcoal is one of the ingredients of gunpowder. It has the power of absorbing disagreeable odors and is used as a disinfectant. It makes an excellent powder for the teeth, and is much used in filters, as it allows the passage of water but arrests foreign substances. Wood charcoal is in demand for fuel, and for blacksmith fires. Without doubt, Longfellow's "Village Blacksmith" used charcoal. It is indispensable in smelting certain metals. Owing to its powers of absorption, it is sometimes given as a remedy. Charcoal crayons, obtained by charring splinters and twigs of willow, are used by artists in making sketches.

Wood charcoal is produced in merchantable quantities by means of regular charcoal ovens, but the simplest and most widely used method is that of the charcoal burners. Split wood is stacked on end to form a round, pointed pile, like a cone or Indian's tepee. The pile is then banked or covered almost to the very tip with sods and earth or wet ashes to keep the air out. Holes are left here and there in the banking to admit some air. The wood is then fired at the very tip of the pile, and the

fire is allowed to eat its way down the center and from the center toward the outside. The charcoal burner remains in constant attendance, but can tend a number of pits at the same time. He watches the issuing of the smoke with concern. As long as a thick, white smoke comes out, all is going right. If the smoke grows thin, or blue, the fire is burning too vigorously and is doing its work too well. He must close up some of the air vents or pile ashes on the peak to smother the fire. After he judges that the firing has proceeded long enough, several days perhaps, the burner closes up all the vents and the peak with ashes or earth, and leaves the pile to smolder and cool. Judgment and experience are needed to burn charcoal. If the air is shut out too closely the fire may go out, and then must be rebuilt. If the fire gets under headway for an hour the pit may burn out and the work of weeks be reduced to ashes. The whole secret of the process lies in the fact that, of the different elements that go to make up wood and oil, carbon is the last to take fire. The other elements fly into gas and are consumed before carbon is ignited at all. If a fire be smothered skillfully, so as to produce the right degree of heat and the right amount of combustion, the carbon is left behind as charcoal. Oak, ash, maple, beech, pine, elm, chestnut, and sycamore are largely used by the burners. A cord of wood burned skillfully yields about thirty bushels of charcoal weighing fifteen pounds to the bushel.

Lampblack is a form of finely divided charcoal, obtained by catching the dense black smoke from half-smothered flames of oil lamps. The smoking lamps are placed in a specially constructed chamber beneath sacking on which the lampblack settles.

Boneblack is made from fresh bones crushed into fragments, and subjected to the right degree of heat in earthenware retorts. Boneblack is used as a filter; liquids passing through it give up their color.

See GUNPOWDER; CARBON; DIAMOND; COAL.

Charing Cross, an intersection of streets at the southern side of Trafalgar Square near the Thames. This busy spot is considered the geographical center of London. Distances are reckoned from it. The village of Charing formerly stood here. When Edward I was conveying his queen Eleanor's remains to Westminster Abbey, he erected a memorial cross at each stage where the bier rested. This is traditionally one of the spots. A new cross, however, was erected in 1863. Charing Cross railway station stands in the vicinity. The street called Strand runs eastward to join the Fleet. Whitehall Street leads to Parliament House and Westminster Abbey, and the Mall leads westward by St. James Park to Buckingham Palace. See LONDON.

Chariot, a historic vehicle consisting of a low axle, two wheels, a pole, and a box open behind. The driver stands in the box and guides his steed. The ancient Egyptians and Assyrians understood the making of elaborate chariots with spoked wheels, as depicted on their monuments. Achilles tied the body of Hector to his chariot and dragged it about the walls of Troy. The Egyptians pursued the children of Israel with chariots. Strong blades or knives were affixed to the wheels of war chariots to cause havoc in the ranks of the enemy. Chariot races were a favorite amusement among the ancients. A spirited account of such a race is given by Lew Wallace in *Ben Hur.* See CARRIAGE.

Charivari, shȧ-rē-vȧ-rē′, colloquially chivaree, a mock serenade. The name, as well as the custom, originated in France. The rustic charivari was introduced into the United States, and is still prevalent in some sections as an attention bestowed upon newly married couples. Drums are beaten, tin pans rattled, and whistles are blown, with shrieks, yells, sometimes firing of guns, and every other discordant element. While such attention may hardly be said to be agreeable, yet a large and enthusiastic charivari is by no means looked upon as a sign of unpopularity. Its absence in some sections would be regarded as a social slight. After the noise has proceeded long enough to serve the purpose of courtesy the serenaders are invited in to partake of refreshment provided for the occasion. The custom has been discon-

tinued so generally, however, that it has come to be looked upon as wanting in refinement. The term is also applied to noisy, insulting demonstrations directed against some obnoxious person. This, however, not in the United States.

Charlemagne, shär'le-mān (742-814), or Charles the Great, king of the Franks. He was born at Aix-la-Chapelle. He died and was buried there, yet he was a great traveler. He is the foremost historical figure, the greatest doer of things, in several centuries. He inherited the kingdom of the Franks from his father Pippin, who had displaced the Merovingian kings by papal consent in 750. He extended the bounds of his territory until it included the greater part of western Europe. The seat of the Roman Empire had been at Constantinople for centuries, and the West had fallen away. He revived the notion of a western empire which should be independent of the Greek government at Constantinople. Pope Leo favored the idea and placed the imperial diadem on his head in St. Peter's basilica at Rome, crying aloud, "To Charles Augustus, crowned by God, great and pacific emperor, life and victory." This coronation took place in 800. It gave the West the idea of a great empire corresponding to a great church. Wherever the banners of the empire floated the church should find protection. Wherever the doctrines of the Roman Church were accepted the authority of the empire should be recognized. Pope and emperor; emperor and pope; the holy Catholic church; the holy Roman Empire; state and church hand in hand. This was the beginning of modern European history. The notion of the empire was at times the controlling political idea in Europe. It persisted until abolished by Napoleon with whose ambitions it conflicted.

During his reign of forty-six years Charlemagne made fifty-two military campaigns. He routed the Saracens in northeastern Spain; won the iron crown of the Lombards; converted the Saxons with the combined arguments of war and Christianity as far as the Elbe and the Baltic, and subjugated the Huns in the valley of the Danube. The sword of Charlemagne and the cross of the monk were inseparable. Wherever the banner of the empire was planted monasteries were built and the voices of monks rose in morning prayers.

Nor were schools neglected. Charlemagne's capital and favorite place of residence was Aix-la-Chapelle. Here he built a magnificent palace and a noble marble cathedral or "chapelle" which gave its name to the city. Schools were established throughout the empire for the training of priests, and at his own home he established what was known as the palace school for the young people, the sons of nobility who flocked to his court.

Charlemagne was a large man in every way. He fought like a lion, but it was to establish peace. He sought power, but it was to use it justly. He extended and strengthened his government, but it was for the benefit of the people. He favored education, not ignorance; art, not idle luxury; comfort and plain living, not extravagance. Scholars were encouraged to live at court. Pacific, courageous, kindly, determined, industrious, quiet, scholarly, largehearted, and merciful, in many ways like King Alfred, it is safe to say that had his successors been more like him the step of Europe might have been hastened a couple of centuries. At his death part of his work went backward. When he died in 814, he was embalmed, seated in coronation robes on a golden throne in a marble tomb in the gallery of the cathedral. A crown was placed on his head; a sword was placed in his hand, and an open volume of the Scriptures was laid on his lap, signifying the great ruler, conqueror, lawgiver, patron of learning and the son of the church. In the year 1000 Otho III opened the tomb. In 1165 Frederick Barbarossa opened it a second time, and transferred the remains to a marble sarcophagus. In 1215 the remains were inclosed in a gold and silver chest or reliquary, where they rest, with other precious treasures, in the sacred precincts of the cathedral. Charlemagne's crown, sword, scepter, coronation robes, and gloves are preserved in the imperial treasury at Vienna.

See AACHEN.

CHARLEMAGNE, THE MAN.

Charles was large and robust, of commanding stature and excellent proportions, for it appears that he measured in height seven times the length of his own foot. The top of his head was round, his eyes large and animated, his nose somewhat long. He had a fine head of gray hair, and his face was bright and pleasant; so that, whether standing or sitting, he showed great presence and dignity. Although his neck was thick and rather short, and his belly too prominent, still the good proportions of his limbs concealed these defects. His walk was firm, and the whole carriage of his body was manly. His voice was clear, but not so strong as his frame would have led one to expect.

He took constant exercise in riding and hunting, which was natural for a Frank, since scarcely any nation can be found to equal them in these pursuits. He also delighted in the natural warm baths, frequently exercising himself by swimming, in which he was very skillful, no one being able to outstrip him. It was on account of the warm baths at Aix-la-Chapelle that he built his palace there and lived there constantly during the last years of his life and until his death. . . .

He wore the dress of his native country, that is, the Frankish; next his body a linen shirt and linen drawers; then a tunic with a silken border, and stockings. He bound his legs with garters and wore shoes on his feet. In the winter he protected his shoulders and chest with a vest made of the skins of otters and sable. He wore a blue cloak, and was always girt with his sword, the hilt and belt being of gold and silver. Sometimes he wore a jeweled sword, but he did so only on great festivals or when receiving foreign ambassadors.

He thoroughly disliked the dress of foreigners, however fine; and he never put it on except at Rome—once at the request of Pope Adrian, and again, a second time, to please Adrian's successor, Pope Leo. He then wore a long tunic, chlamys, and shoes made after the Roman fashion. On festivals he used to walk in processions clad in a garment woven with gold, and shoes studded with jewels, his cloak fastened with a golden clasp, and wearing a crown of gold set with precious stones. At other times his dress differed little from that of a private person.

In his eating and drinking he was temperate; more particularly so in his drinking, for he had the greatest abhorrence of drunkenness in anybody, but more especially in himself and his companions. He was unable to abstain from food for any length of time, and often complained that fasting was injurious to him. On the other hand, he very rarely feasted, only on great festive occasions, when there were very large gatherings. The daily service of his table consisted of only four dishes in addition to the roast meat, which the hunters used to bring in on spits, and of which he partook more freely than of any other food.—From Einhard's *Life of Charles.*

CHARLEMAGNE'S INCOME FROM HIS FARMS.

We desire that each steward shall make an annual statement of all our income, giving an account of our lands cultivated by the oxen which our own plowmen drive and of our lands which the tenants of farms ought to plow; of the pigs, of the rents, of the obligations and fines; of the game taken in our forests without our permission; of the various compositions; of the mills, of the forest, of the fields, of the bridges and ships; of the free men and the districts under obligations to our treasury; of markets, vineyards, and those who owe wine to us; of the hay, firewood, torches, planks, and other kinds of lumber; of the waste lands; of the vegetables, millet, panic; of the wool, flax, and hemp; of the fruits of the trees; of the nut trees, larger and smaller; of the grafted trees of all kinds; of the gardens; of the turnips; of the fish ponds; of the hides, skins, and horns; of the honey and wax; of the fat, tallow, and soap; of the mulberry wine, cooked wine, mead, vinegar, beer, and wine, new and old; of the new grain and the old; of the hens and eggs; of the geese; of the number of fishermen, workers in metal, sword makers, and shoemakers; of the bins and boxes; of the turners and saddlers; of the forges and mines,—that is, of iron, lead, or other substances; of the colts and fillies. They shall make all these known to us, set forth separately and in order, at Christmas, so that we may know what and how much of each thing we have.

The greatest care must be taken that whatever is prepared or made with the hands,—that is, bacon, smoked meat, sausage, partially salted meat, wine, vinegar, mulberry wine, cooked wine, garum, mustard, cheese, butter, malt, beer, mead, honey, wax, flour,—all should be prepared and made with the greatest cleanliness.

Each steward on each of our domains shall always have, for the sake of ornament, peacocks, pheasants, ducks, pigeons, partridges, and turtledoves.

In each of our estates the chambers shall be provided with counterpanes, cushions, pillows, bedclothes, coverings for the tables and benches; vessels of brass, lead, iron, and wood; andirons, chains, pothooks, adzes, axes, augers, cutlasses, and all other kinds of tools, so that it shall never be necessary to go elsewhere for them, or to borrow them. And the weapons which are carried against the enemy shall be well cared for, so as to keep them in good condition; and when they are brought back they shall be placed in the chamber.

For our women's work they are to give at the proper time, as has been ordered, the materials,—that is, the linen, wool, woad, vermilion, madder, wool combs, teasels, soap, grease, vessels, and the other objects which are necessary.

Of the kind of food not forbidden on fast days, two-thirds shall be sent each year for our own use,—that is, of the vegetables, fish, cheese, butter, honey, mustard, vinegar, millet, panic, dried and green herbs, radishes, and, in addi-

tion, of the wax, soap, and other small products; and let it be reported to us, by a statement, how much is left, as we have said above; and this statement must not be omitted as in the past, because after those two-thirds we wish to know how much remains.

Each steward shall have in his district good workmen, namely, blacksmiths, a goldsmith, a silversmith, shoemakers, turners, carpenters, sword makers, fishermen, foilers, soap makers, men who know how to make beer, cider, perry, or other kind of liquor good to drink, bakers to make pastry for our table, net makers who know how to make nets for hunting, fishing, and fowling, other sorts of workmen too numerous to be designated.—Extract from the *Capitulary de Villis,* issued in the year 800 or earlier.

Charles I, Charles Francis Joseph (1887), Emperor of Austria and King of Hungary, succeeded to the throne on November 22, 1916, on the death of his grand uncle, Francis Joseph, who had ruled sixty-eight years. Charles was the first of the imperial house of Hapsburg to obtain his education in the public schools. As a result of this he became very popular with all classes of people. His training was largely military and he became an efficient officer. His home life, prior to the assassination of Archduke Francis Ferdinand, in 1914, was very simple, but after that time he took over the estate of Este with its enormous revenue, which quite changed his mode of life. Charles took an active part in the prosecution of the war, but the day after the Armistice was signed, impelled by a revolutionary movement toward a republic, Charles abdicated and fled to Switzerland.

Charles I (1600-1649), king of England. He was the son of James I, and the second Stuart sovereign. Politically and religiously he resembled his father, being an upholder of the "divine right" theory and strongly opposed to Puritanism. His determination to levy taxes without the consent of Parliament, led to the passing of the Petition of Rights in 1628. Later, after ten years of personal rule, he was obliged, because of religious troubles with Scotland, to summon another Parliament in 1640, which is known as the Long Parliament. As a result of the struggle between this Parliament and the king, civil war broke out which ended only with the execution of Charles in 1649. It is worthy of note that with the exception of Plymouth, all of the New England colonies were started during this period of religious and political persecution, thousands of English Puritans having migrated to Massachusetts Bay and the neighboring colonies from 1630-1640.

Charles II (1630-1685), king of England, son of Charles I. He came to the throne at the close of the Commonwealth in 1660, when the people, weary of the stern Puritan government of Cromwell, were ready for a change. Dickens in his *Child's History of England,* gives an interesting account of the doings of this "Merry Monarch." Of him, one of his courtiers wrote:

"Here lies our sovereign lord, the king,
Whose word no man relies on;
Who never says a foolish thing,
And never does a wise one."

His reign is a period of duplicity, and attempts to evade parliamentary rights. The notorious cabal dates from this time. In spite of, or perhaps because of, the king, some advance was made toward popular liberty, notably in the passage of the Habeas Corpus Act.

See CABAL; HABEAS CORPUS.

Charles V (1500-1558), emperor of Germany and one of the great figures in the pages of history. From Ferdinand and Isabella, his grandparents on his mother's side, he inherited Spain and the New World discovered by Columbus. From his father he inherited the rich provinces of the Netherlands. From his father's father, Maximilian, he inherited Austria. By election in competition with Henry VIII of England and Francis I of France he was made emperor, the head of the Holy Roman Empire. The idea of a universal empire—the restoration of the empire of Charlemagne—was now revived, but the Reformation broke out. With north Germany pulling one way under the influence of Luther, and England led in another direction by the authority of Henry VIII, the energies of one of the greatest men of the age were frittered away in keeping what he had, in retarding progress, in trying to reconcile irreconcilable Protestant and Catholic elements. A reign which gave promise of a single state

and a single church in all Christendom was signalized by the worst splitting up into acutely hostile camps the world has ever witnessed. After a stormy, disappointing life Charles abdicated. He laid down his crowns in 1556, and went into retirement for the few remaining years of his life.

Charles XII (1682-1718), king of Sweden. He came to the throne when fifteen, and showed so wholesome and boyish an interest in books, games, and hunting that his neighbors thought to rob him of a part of his inheritance. The Poles, the Danes, and the Russians combined to cut off provinces for their own benefit. The Danes were the first to find that they had mistaken the temper of the young lad. He adopted a plain manner of living—forbade wine on his table, dressed comfortably in a fur coat and large boots, and enjoyed sleeping on the ground wrapped in a soldier's cloak. When he had a breathing spell he turned his attention to the Russians, defeating an army of 80,000 men that were laying siege to one of his cities. The Poles and Saxons came next. For a time Sweden was the foremost military power in Europe and military men called him the madman of Europe. Very possibly success may have turned his head. In 1707 he led an army of 43,000 Swedes against Moscow, and after a campaign of two years, conducted in a hostile country altogether too far from home and supplies, he was defeated disastrously. He fled to Turkey for protection. He stirred up the Turks to make war on Russia, and brought Peter the Great to the verge of destruction. By a sudden change of Turkish sentiment his efforts came to naught, and he escaped from the Turks in disguise. Returning to Sweden he busied himself getting the affairs of his country out of the confusion into which they had fallen. In 1718 he was killed by a cannon ball while besieging the city of Frederikshald. His characteristics are not inaptly set forth by the circumstances of his death. It is said he fell with his hand on his sword, and with a picture of his great ancestor, Gustavus Adolphus, and a prayerbook in his pocket. Charles was scholarly, ambitious, and brave. He did not have the resources behind him with which to maintain his conquests. Dr. Samuel Johnson mentions his as a striking example in his *Vanity of Human Wishes.*

He left the name at which the world grew pale,
To point a moral, to adorn a tale.

Charles the Bold (1433-1477), was a duke of Burgundy, on the borderline between France and Germany. A good view of his court and an estimate of his character may be had in Scott's *Quentin Durward.* He was an ambitious man. His country had no natural boundary—no natural independence. He tried to extend his dukedom into a kingdom. He acquired territory for a time, but he was defeated signally by the Swiss in the battles of Granson and Morat. In 1477 he was slain in battle. In Scott's *Anne of Geierstein* we have a vivid picture of rending lances and the rout of Charles' army.

Charles Edward Stuart (1720-1788), the "Young Pretender." He was the grandson of James II, the last male Stuart on the throne of England. Though living abroad he assumed the title of king, and was called the Pretender. In 1745 he landed in Scotland with a little French money and 1,500 muskets. The Highlanders, encouraged by the Jacobites, chiefly Catholic, everywhere flocked to his standard. He advanced to within 100 miles of London, winning the battles of Prestonpans and Falkirk, but he was defeated finally in the famous battle of Culloden. He escaped with difficulty to the Highlands. A reward of $150,000 was offered for his betrayal but the Highlanders were loyal. Through the management of the dauntless Flora McDonald, he lay in hiding until a ship bore him away to France. France and Spain settled a pension on him. His rights to the throne, so far as the rule of succession went, were unquestioned, but his moral and his political and religious views were not acceptable to the nation.

Charles' Law. The effect of heat on a mass of gas is to increase its volume. If enclosed so that it cannot expand the pressure which it exerts is increased. The law governing these relations is called Charles' Law, or sometimes Guy Lussac's Law. It has been found by experiment that either

pressure or volume remaining constant, the other increases at a rate of 1/273 of that at 0°C, for each degree rise of temperature. Reducing the temperature then to 273°C, would, if the law held true to that limit, reduce the pressure and volume to zero, which latter is manifestly impossible. What would happen, probably, if this low temperature, known as the absolute zero, could be reached, is that the molecules of which the gas is composed, would cease their motion due to actual contact, when the state would no longer be that of a gas. Another way of stating this law is that under the same pressure the volume of a gas varies as its absolute temperature.

Charles Martel (689-741), Mayor of the Palace under the Merovingians. During the seventh and eighth centuries, while the power was rapidly slipping from the hands of the slothful Merovingian rulers of the Franks, a new family distinguished through five generations was rising into prominence. These held the office of Mayor of the Palace, and were the real rulers of the Frankish kingdom. The greatest of this family before Charlemagne was his grandfather, Charles Martel. Most of his administration was spent in war, first in subduing the rebellious parts of the Frankish kingdom itself, then in war against their neighbors. His greatest achievement, however, was the defeat of the Mohammedans at the Battle of Tours in 732. Repulsed and crushed by the forces of Charles, the Saracens retreated across the Pyrenees into Spain. Western Europe was thus saved from the Mohammedanism that engulfed the eastern world, and its savior was immortalized by the epithet Martel, meaning the hammer, added to his name.

Charleston, South Carolina, the metropolis of the state. It is situated on a peninsula at the head of a landlocked harbor, six miles long and half as wide—one of the finest in the Union. The Ashley and the Cooper rivers sweep by, one on either hand, giving a water front on three sides. By building jetties so that the tides race out and in through a narrow channel, a bar across the ocean entrance has been scoured away to a depth of thirty feet. The water at the city is forty feet deep. The harbor is defended by Fort Moultrie at the entrance, and by Fort Sumter on an island in the middle of the bay. The former was the scene of Sergeant Jasper's gallant exploit; the latter was the fortification against which the first gun of the Civil War was fired.

A settlement was begun in 1670. Fifteen years later a colony of Huguenots built a church. The old Huguenot families of Charleston correspond to the Dutch families of colonial New York. When the Revolutionary War came, Charleston was the third seaport in the colonies. It was outspoken for the American cause. A British fleet was beaten off in 1776 by Fort Moultrie, then a palmetto log fort. In 1780 the city was taken by Sir Henry Clinton, who made it his base of operations in the south. Charleston was the first American port to send cotton to Europe. The earliest shipment was sent in 1784. In 1865 the public buildings and shipping were burned to prevent their falling into the hands of General Sherman. In 1886 one of the heaviest earthquake shocks ever known in the United States reduced the city to a wreck, killing half a hundred people, and damaging buildings to the extent of over $8,000,000.

Notwithstanding its checkered history the city is growing rapidly. The 1900 census gave a population of 55,807, of which 31,622 were negroes. Its commerce is fast increasing and bids fair to exceed the figures before the Civil War, when $17,000,000 worth of cotton alone was exported annually. Among the present exports are rice, cotton, turpentine, lumber, fertilizers, fruits, and vegetables. The city has a monopoly of the long, staple, Sea Island cotton, the finest in the world. The population by the census of 1920 was 60,734.

The leading manufacture of the city is that of fertilizers from the inexhaustible deposits of phosphate found in the vicinity. Rice is milled; leaf tobacco made into cigars and plugs; cotton is baled; oil is pressed from cotton seed; bags are woven; and baskets and crates for fruit are manufactured in enormous numbers. The city is built of brick. Mansions are set back from the street in beautiful gardens. The finest

public buildings are the postoffice and custom house, the most interesting is an imposing old city hall with a fine historical museum. St. Michael's church was built in 1761. It has a fine chime of bells. Many places of interest are to be found in the vicinity. The Isle of Palms is one of the handsomest seaside resorts in the world.

The United States has been liberal in its dealings with Charleston. In addition to jetties, a postoffice costing $500,000 and a custom house costing $3,000,000, not less than $10,000,000 is being expended on a naval station seven miles up the Cooper.

See SOUTH CAROLINA.

Charleston, the capital city of West Virginia and county seat of Kanawha County. It is the center of trade for large coal and lumber interests, its situation at the confluence of the Elk and Kanawha Rivers affording ample shipping facilities. The city has many fine public buildings and handsome residences. Its industries include iron foundries, steel plants, boiler works, marble works, woolen mills, dye works, machine shops and ship yards. There are manufactories of furniture, glass, wagons, and axes. The city is supplied with natural gas. Its population in 1920 was 39,608.

Charles's Wain, an English name for the constellation of the Great Bear—the Big Dipper. The term is understood to be a corruption of Carl's wain, or the peasant's wagon.

And we danced about the may-pole and in the hazel copse,
Till Charles's Wain came out above the tall white chimney-tops.—Tennyson, *May Queen.*

Charlotte, a growing city of North Carolina and county seat of Mecklenburg County. It is situated on Sugar Creek, one hundred twenty-five miles southwest of Raleigh. It is in a coal mining region, and gold mines have been opened in the vicinity. There are manufactures of cotton, iron, clothing, farming implements, and mill supplies. It is the seat of Biddle University. The climate is considered desirable for invalids. The population of Charlotte in 1920 was 46,318.

Charon, kā′ron, in classical mythology, the ferryman whose duty it was to transport the souls of the dead over the rivers of the lower world. Charon was the son of Erebus and Nox. He is described as an old man, gloomy and sad of countenance, with a matted beard and squalid clothing.

Lucian, a Greek writer of the second century, in his *Dialogues of the Dead,* represents the souls of the dead as offering Charon excuses for delaying their passage across the stream from which there is no return. In Ben Jonson's tragedy, *Catiline,* so many souls are represented as seeking passage at one time in Charon's boat that

The rugged Charon fainted,
And asked a navy rather than a boat,
To ferry over the sad world that came.

Charon is represented by some writers as bearing the souls first over the Acheron, then over the Cocytus, and lastly over the Styx. In the sixth book of the *Aeneid,* Aeneas descends to the lower world with his guide, and finds Charon on the shores of the river Acheron, where it empties into the Cocytus. Virgil does not keep the rivers distinct, however, for Aeneas is taken across the "Stygian flood" in Charon's boat. Charon's fee was a small coin—an obolus or a danace which, at the time of burial, was placed in the mouth of the deceased.

There Charon stands, who rules the dreary coasts;
A sordid god; down from his hoary chin
A length of beard descends, uncomb'd, unclean;
His eyes like hollow furnaces on fire;
A girdle foul with grease binds his obscene attire.
He spreads his canvas, with his pole he steers;
The freights of flitting ghosts in his thin bottom bears.
He look'd in years, yet in his years were seen
A youthful vigor, an autumnal green.—Virgil.

Charon's Staircase, in the Greek theater, steps which led from the middle of the stage to the orchestra or dancing place, which corresponds to the pit in modern theaters. In plays in which a ghost appeared, it reached the stage by way of these steps, whence the name, Charon's staircase. See CHARON; THEATER.

Charterhouse, a hospital and school formerly of London but now located at Godalming, Surrey County, England. In 1371 there was established in London a Carthusian monastery. In 1611, Sir

Thomas Sutton converted the monastery into a sort of almshouse for "poor brethren" and school for the "sons of poor gentlemen," endowing it with revenues from more than twenty estates. Charterhouse provides a home for eighty "poor brethren" who must be bachelors, members of the Church of England and at least fifty years of age. The school offers forty-four scholarships to boys from twelve to fifteen years of age, but the school has acquired such a reputation that the sons of many Londoners who are not "poor gentlemen" are sent to it. Many noted Englishmen, among them John Wesley, George Grote, Addison, Thackeray, Steele, and Blackstone attended the Charterhouse School.

Charter Oak, a fine old oak tree at Hartford, Connecticut. It was over six feet in diameter at the time of its destruction by a storm, August 21, 1856. This oak is one of the historic trees of America. Connecticut was an independent colony governed by its own assembly, elected in accordance with a charter granted by the king of England in 1662. In 1686 Sir Edmund Andros was sent over to govern the New England colonies. In October of the following year he visited Hartford and called on the assembly to surrender its charter. The story runs that the debate was prolonged until late, when the lights were extinguished and a Captain Wadsworth took the charter from the table and hid it in a hollow in this oak tree, where it remained until a change of government in England enabled the colony to resume its previous form of government. See HARTFORD.

Chartists, and **Chartism,** a radical reform movement in England about 1830-48. The name is derived from a charter, or declaration of needed reforms. It was drawn up by a joint committee of six workingmen and six members of Parliament. The reformers insisted on what now seem matters of course to an American, but they were then deemed revolutionary, and, indeed, they went further than most of the original American states had gone at the opening of this period. The leading demands were six: (1) a vote for each man; (2) parliamentary representation according to population; (3) voting by ballot; (4) pay for members of Parliament so that poor men could afford to serve; (5) annual elections; (6) abolition of property qualifications for membership in Parliament. The movement was attended by riots and immense meetings, but the excitement subsided with time. Twenty years later a second agitation resulted in a substantial granting of the demands, though, even yet, an unmarried son at home may not vote, neither does a member of Parliament receive compensation. The conditions of the Chartist period may be seen in Charles Kingsley's *Alton Locke* and *Yeast*.

Chartres, shärter, a city fifty miles southwest of Paris. It is an ancient town half surrounded by walls. It is the seat of the trade usual to a prosperous agricultural region. It is noted for its vast, magnificent Gothic cathedral, one of the finest in Europe. This church has two spires of different construction. The tallest is 403 feet in height. It is considered the most perfectly proportioned spire in the world. There are 130 stained glass windows of exquisite workmanship, some of them dating from the thirteenth century. Henry IV was crowned in the choir of this cathedral, and St. Bernard preached the Second Crusade here. Quite in contrast are the surrounding wood and plaster houses. They are set with the gable toward the streets which, in many places, are so narrow and so steep that carriages cannot pass.

Charybdis, ka-rĭb′dis, in Greek mythology, a terrible sea monster who, three times each day, sucked in the sea and discharged it again in a whirlpool. Charybdis was supposed to have been a daughter of Poseidon and Gaea, whom Zeus in anger had hurled into the sea. There she became a whirlpool and swallowed up ships that came too near. Charybdis was located in the Straits of Messina, on the Italian side. Navigators striving to escape the fate of being sucked into the whirlpool were likely to run into danger from Scylla, another monster on the opposite shore. The words Scylla and Charyb-

dis came to be used proverbially to signify opposite dangers that beset one's path. The poet Horace says that an author striving to avoid Scylla often drifts into Charybdis; that is, in trying to avoid one fault, he falls into some other. In Shakespeare's *Merchant of Venice,* Launcelot, the clown, says to Jessica, "Thus when I shun Scylla, your father, I fall into Charybdis, your mother." See SCYLLA.

Chase, Salmon P. (1808-1873), chief justice of the United States. He was born at Cornish, New Hampshire, January 13, 1808, and died at New York, May 7, 1873. His father was a farmer. When a boy he lived with his uncle, Bishop Philander Chase, near Cincinnati, for the purpose of attending his school. Many anecdotes are told of the bookish boy. With a party of his classmates he started for a trip in the woods. The other boys agreed to make him carry the lunch basket. This he did uncomplainingly until he thought he had done his share. Then he offered it to one after another, but all declined; whereupon young Salmon set the basket down. The party went on, thinking that Salmon would go back after it, but he was evidently the last one who intended to do so, and they were obliged to send one of their own number for it. At another time his uncle told him to kill and dress a pig. He got his water too hot, with the result that the bristles set, and could not be pulled out. Nothing daunted, young Salmon obtained his cousin's set of razors and shaved the pig admirably from head to tail. He was complimented by his uncle, the bishop, for the excellency of his workmanship, but a settlement came later when his cousin tried to use his razors.

Later Chase graduated at Dartmouth and applied to an uncle Chase, then senator, for a position in a Washington department. "My boy," said the old senator, "I'll give you a half a dollar to buy a spade, and you may dig your way into something of a place in life; but I will not get you a place in a government office. I have ruined one or two young men in that way already, and I'm not going to ruin you. The man who enters the government service seldom does anything more. He is swallowed up in these departments and that is the last heard of him." Young Chase thought his uncle hardhearted but he swallowed his disappointment, taught school for a short time, studied law under William Wirt, and opened office at Cincinnati. His first fee was fifty cents, which his client came in the next day and borrowed again. His first case of importance was the defense of a negro. People said that a bright young man had ruined himself, but such did not prove to be the case.

He became governor of Ohio, then a United States senator. He was a candidate against Seward and Lincoln for the presidential nomination. Lincoln made him secretary of the treasury, and later chief justice of the supreme court. Chase was a very able, fearless man, of unquestioned integrity and patriotism. He never could rid himself of the notion, however, that he ought to have been president instead of Lincoln. He not infrequently made himself very disagreeable. He was a man of regular habits and simple tastes, but maintained an elegant home. Under the management of his daughter, Kate, who married Senator Sprague of Rhode Island and was afterward divorced from him, the Chase home in Washington was for many years noted for hospitality and brilliant receptions.

Chassepot, shȧs-pō′, a breechloading rifle invented in 1863 by a Frenchman of that name. It was adopted by the French army in 1866, but was discarded at the close of the Franco-Prussian War. It is a light, accurate, long range rifle, weighing but nine pounds, but heats and becomes clogged in action. The French battalions were able to open a destructive fire at 1,500 yards, but by the time the Germans had reached close range with their needleguns the chassepots were so hot as to be useless.

Chateaubriand, shā-to-brē-ŏn′ (1768-1848), a brilliant French essayist. He lived through the scenes of the French Revolution, the reigns of Napoleon Bonaparte, and the later Bourbons. He held numerous positions of trust and honor, but is noted for his incisive writings. His most noted work is the *Genius of Christi-*

anity, written in favor of Catholicism. A pamphlet on Napoleon and the Bourbons was declared by Louis XVIII to have been worth 100,000 men to him in regaining the throne of his fathers. A touch of interest is added when we know that he traveled in North America and wrote an epic poem on *The Natchez,* commemorating the fate of the red man. Some critic has called him a link between Goethe and Byron.

Aristocracy has three ages: first, the age of force, from which it degenerates into the age of privilege, and is extinguished, finally, in the age of vanity.—Chateaubriand.

Chatham. See PITT, WILLIAM.

Chattanooga, the seat of Hamilton County, Tennessee. It is pleasantly situated on the south bank of the Tennessee River. The presence of coal and iron, together with transportation facilities both by river and by rail, make the city a natural center of iron manufacture. Boilers, steel roofing, gas burners, wagons, furniture, hosiery, and patent medicines are specialities. The city had a population in 1920 of about 58,000. Suburbs add a full half to this estimate. The city lies at the foot of the Cumberlands. Lookout Mountain, Missionary Ridge, and Orchard Knob are in the outskirts. The vicinity is memorable in the history of the Civil War for a series of engagements known as the battle of Chattanooga, fought November 23, 24, and 25, 1863. The Federal troops 60,000 strong, led by Grant, Thomas, Hooker, and Sherman, defeated 40,000 Confederates under General Bragg. The total killed, wounded, and missing for both sides was 12,531. The battlefield of Chickamauga, now a national military park, lies within the Georgia border, six miles to the eastward. The entire vicinity is scenic and historic. Large, comfortable hotels and mild winter weather render the city a favorite resort.

Chatterton, chăt'er-ton, **Thomas** (1752-1770), an English poet. It is not so much for his poetry that Chatterton's name is remembered, as for a peculiar literary deception which he practiced upon his contemporaries. It is not an uncommon thing for a person to claim the authorship of that which has been produced by others. This boy—he was not yet eighteen when he died—produced poems, many of them of merit, and pretended that they were the work of writers of a bygone age. When his story is known he is not apt to be blamed greatly.

Chatterton was born at Bristol. His father, a schoolmaster who had been something of an antiquary, something of a musician, and something of a poet, died before the boy's birth. The mother worked hard to care for her two children. Thomas was so unlike other children that he was regarded as lacking in intelligence. He attended a charity school for a short time, and before he was ten years old had developed into a dreamy, imaginative, sometimes melancholy, bookworm, who, if let alone, spent his entire time in reading. When he was about eleven years old he was stirred up by the removal of a beautiful but very ancient cross from the churchyard of St. Mary Radcliff. The indignant boy wrote and published in a local journal a very clever satire on the parish vandal, alluding to the churchwarden who had caused the removal of the ornament. Other contributions followed.

In the muniment of this same church, whose sexton was Chatterton's uncle, were several old oaken chests filled with parchment deeds and records. With these the boy had amused himself from babyhood. The beautiful old church was his favorite haunt, and it was doubtless here that he conceived the beginnings of an ingenious romance which came to be a large part of his life. This romance was of an imaginary monk, supposed to have lived in the fifteenth century. His name was Thomas Rowley, and his life and various experiences were worked out with wonderful skill by the precocious boy. The many beautiful poems, which Chatterton claimed that Rowley had written and he had discovered in the old chests, were probably produced from 1764 to 1768. Many of the boy's credulous contemporaries accepted them without question, and they occasioned discussion for a full century. Soon the boy went to London. Here, while some of his work was accepted, he was poorly

paid. He became discouraged and, before he was quite eighteen years of age, took his own life. He was buried by strangers in a pauper's grave. Later his remains were removed to the old churchyard of St. Mary Radcliff. A monument was erected to his memory, inscribed with lines from his own pen: "To the memory of Thomas Chatterton.—Reader, judge not! If thou art a Christian, believe that he shall be judged by a Superior Power. To that Power only is he now answerable."

Chaucer, Geoffrey, chaw'ser, jef'frĕ (1340-1400), an English poet. He was the son of a London wine merchant. He was brought up at court as a ladies' page. In 1359 he went to France in the army of Edward III, was taken prisoner and ransomed. A little later he went abroad several times as an ambassador. In this way he became familiar with Italian literature, this being before the day of printing. He was at one time collector of customs. In 1386 he was dismissed by the court to a life of poverty, yet in the end received a pension, and at his death he was the first to be buried in that part of Westminster Abbey now known as the Poets' Corner. There were several English dialects. Chaucer made his dialect so prominent that it became the literary language of England.

At a time when printed books were unknown and diverting manuscripts few, Chaucer wrote to amuse the queen and the court. A parliament of the birds, a story of the Trojan war, a story of a glass temple on which famous names are carved, but which continually melt away, and stories of famous women, such as Dido and Cleopatra, are some of the subjects. His fame rests on the *Canterbury Tales,* the best stories in verse in the English language. Chaucer is called the father of English poetry. He was not the first to write verse, but his predecessors wrote in Anglo-Saxon, almost as difficult to read as French. Chaucer is the first great English poet.

The *Tales* were not the invention of a day. It was the fashion of the time to make a pilgrimage to the shrine of Thomas à Becket at Canterbury, "the holy blissful martyr for to seek." A company of people representative of the different classes of society happens together at the Tabard Inn in Southwark. This inn is still to be seen in southwest London at the beginning of the Canterbury road.

The poet introduces the characters in a prologue. Some of the more prominent of them are a clerk, or scholar, who would rather have twenty books of Aristotle in "blak or reed" than rich robes, "And gladly wolde he lerne, and gladly teche"; a "veray parfit gentil knight," and his son, a yonge squire, who was

A lovyere and a lusty bachelor;

a prioress,

That of her smyling was ful symple and coy;

a ruddy, baldheaded monk, fond of hunting,

A fat swan loved he best of any roast;

a wanton merry friar,

He was an esy man to give penance;

a merchant with a forked beard and Flanders' beaver hat; a wise sergeant of the law,

Nowher so besy a man as he ther n'as,
And yet he semed besier than he was;

a franklin,

Whit was his berd as is a dayesye;

he cared not who was his cook, if the sauce were right; a doctor, who spoke of "phisik and surgerye" and who loved gold; a good wife with red stockings and new shoes, a bold face and a shrewd tongue, and yet she was a worthy woman all her lyve:

Housbondes at chirce dore she hadde fyve;

a poor parson rich in holy thought and work, who visited the sick and set an example of a right life, preaching the gospel,

That firste he wroghte and afterward he taughte.

Other characters are a plowman; and a miller

Well koude he stelen corn and tollen thries,

a reve; a pardoner; a haberdasher; a carpenter; a weaver; a dyer; a cook; a shipman; and, lastly, their host of the Tabard Inn.

All these characters, twenty-nine in all, Chaucer sets on horseback under the guidance of the Tabard host. Under the influ-

ence of a common purpose, restraint is for the once relaxed, social distinctions are laid aside. They set off a merry company. As they jog along each is to tell a tale. It is difficult to describe the tales without repeating them. So far as Chaucer found time to compose them, he puts into the mouth of each such a tale as might be expected of one in that particular walk of life. In this way the tales give a picture of the manners, jokes, and ways of thinking of the different kinds of people then living. The full number of tales was never completed.

The study of Chaucer is not at all difficult if undertaken with an edition provided with a vocabulary. The old spellings, plurals, possessives, and verb forms are instructive. *Swete* and *smale,* each pronounced in two syllables, are the old forms of *sweet* and *small; ton, eyen,* and *shoon* are old plurals of *toe, eye,* and *shoe,* formed by adding "n" to the singular. *Slepen* and *longen* are the equivalents of the verbs, *sleep* and *long.* The prologue is one of the most artless, cutting, musical bits of writing in the English language. Some of the tales are certainly a trifle coarse. Chaucer ingeniously pleads that he is not at fault, that he must tell the tales as they were told. Chaucer was called by his contemporaries the Flower of Poets.

The star of a misty morning.—Welsh.

The firste fynder of our fair language.—Occleve.

Our greatest poet of the Middle Ages.—Hallam.

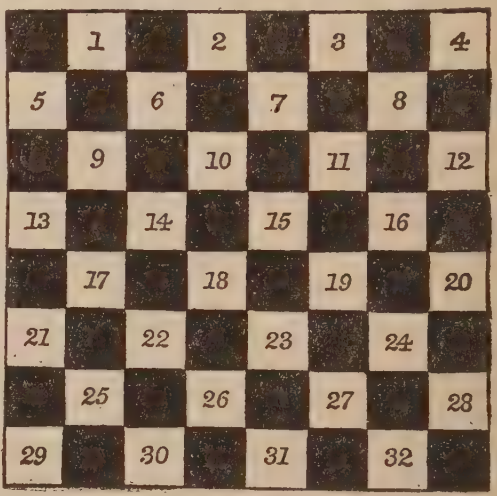
Dan Chaucer, well of English undefyled
On Fame's eternall beadroll worthie to be fyled.
—Edmund Spenser.

Chautauqua, sha-taw′qua, the Indian name of a beautiful lake in extreme western New York. The name has also passed to the county in which the lake is situated and to a summer resort on its shores. The Chautauqua Assembly, instituted by Dr. John Vincent in 1874 to give vacation instruction to Sunday school teachers has grown to large proportions as a summer center for teachers and reform rallies. The Chautauqua Reading Circle grew out of the Assembly. A simple plan of organization has been followed. General officers arrange four-year courses in study and reading, usually preparing special texts for the purpose. Local circles of adults are organized by correspondence. They elect their own officers and meet regularly for study and conference. Diplomas are issued by the general officers upon sufficient evidence that the entire course has been pursued with intelligence. A quarter of a million members have been claimed for the Circle.

Check. See CLEARING HOUSE.

Checkerberry. See WINTERGREEN.

Checkers or **Draughts,** a game of skill. It is played by two persons with twelve disks or men each, on a checkered board of sixty-four squares. The squares are colored in two alternating colors, it matters not what, so that the squares stand in clear



Checkerboard.

contrast. The game is played on the squares of a single color. In the beginning the board is placed so that each player shall have a double corner as 1-5 or 28-32 at his right hand. Each player arranges his twelve men in three rows, so as to occupy the squares numbered 1-12 and 21-32 respectively. The men of one player are called the white; those of the other player, the black. A man may move in either diagonal direction forward, or toward the enemy. Thus white, on 23, may move to 18 or to 19. Black, on 12, may move to 16. When a white man reaches 1, 2, 3, or 4 he has reached the king row and becomes a king. He should be crowned or

doubled by a second disk. He may now move backward. A king at 15 may move to any one of the four squares at its corners; that is to say, 10, 11, 18, or 19. In like manner, a black man reaching 29, 30, 31, or 32 becomes a king. A king is more valuable than a man. Whenever a man finds an adversary on the next diagonal square with a vacant square beyond, he may jump over and take that man, thus removing him from the board. If a white man lay at 19, and a black man at 15, and it were white's turn to move, white might take black by jumping to the vacant 10. The object of the game is to remove the men of one's adversary from the board, or to block them so that they cannot move. When the number of men on each side has been so reduced that there is no hope of either player winning, the game is said to be drawn. Any number of onlookers may be present, but it is considered a want of etiquette to assist either player.

The origin of the game is buried in antiquity. It is an ancient game with the Chinese, and was well known to the Egyptians, Greeks, and Romans. A curious bit of sculpture on the wall of a chamber in ancient Thebes represents Rameses III playing a game of checkers with a goddess. The earliest description of the game in English is dated 1566.

See CHESS; HOYLE; GAMES.

Cheeryble Brothers, The (Charles and Edwin), a firm of London merchants in Dickens' *Nicholas Nickleby*. They are twin brothers, warmhearted, simpleminded, cheerful old gentlemen, friends of the Nicklebys. It is said that Dickens found the originals of these characters in the Grant brothers, cotton-spinners of Manchester. Dickens follows a not uncommon fashion of his own in selecting a name for these brothers, which, by its sound, conveys some impression of the owner's personality. Dickens' prefaces to various volumes of his works are often interesting. The following quotation in regard to the Cheeryble Brothers is from the preface to the first edition of *Nicholas Nickleby:*

> Those who take an interest in this tale will be glad to learn that the Brothers Cheeryble live; that their liberal charity, their singleness of heart, their noble nature, and their unbounded benevolence, are no creations of the author's brain; but are prompting every day (and oftenest by stealth) some munificent and generous deed in that town of which they are the pride and honor.

In the preface to a later edition of the same work, the above paragraph is quoted, with the following addition:

> If I were to attempt to sum up the hundreds upon hundreds of letters, from all sorts of people in all sorts of latitudes and climates, to which this unlucky paragraph has since given rise, I should get into an arithmetical difficulty from which I could not easily extricate myself. Suffice it to say, that I believe the applications for loans, gifts, and offices of profit which I have been requested to forward to the originals of the Brothers Cheeryble (with whom I never interchanged any communication in my life), would have exhausted the combined patronage of all the Lord Chancellors since the accession of the House of Brunswick, and would have broken the rest of the Bank of England.

See NICHOLAS NICKLEBY.

Cheese, a dairy product prepared from curd or coagulated milk. Cheese is less concentrated than butter. It can be kept wholesome for a greater length of time and it saves a larger percentage of the strength of the milk. Homemade cheese is still an important article of produce. When milk is brought to the right temperature, about 84°, liquid rennet is added in sufficient quantities to produce coagulation. Under proper conditions milk separates in from twenty to thirty minutes, into a white curd and a watery whey. The latter is drained off, and, though it contains less food than buttermilk, it is richer than water, and is sent to the swill barrel. The curd is then removed to a chopping bowl and cut into fine pieces, to permit the escape of whey that may be inclosed in air spaces. This operation is performed with a sharp knife of two or more parallel blades like that used in chopping hash. The fine curd is then salted to taste, placed in a cloth, and deposited in a cheesehoop or strong wooden cylinder surrounded with iron hoops, having much the appearance of a half-bushel measure, but without top or bottom. The hoop with its contents is placed on a flat surface in a cheese press. A circular board, fitting like a piston, is placed in the upper end of the hoop, and

pressure is applied for a day or two until what little whey remains has been forced out, and the curd has been pressed into a firm cheese. The cheese is then removed from the hoop and covered with three pieces of cotton cloth, one piece running like a band around the circumference, with a circular piece for each end and all neatly sewed together. It is then anointed with butter and placed on a shelf to cure. Curing cheeses are turned every few days and reanointed. The cloth and ointment are designed not only to keep the cheese in shape and to protect it from becoming soiled, but to exclude the eggs of flies and other insects. A sort of bacterial fermentation takes place in the cheese, when it is said to be ripe and ready for market. Some prefer a cheese three months old; others want it to ripen for two or three years.

About the middle of the last century, cheese factories sprang up in America. It has been found not only that they save housewives labor, but that factory cheese can be produced more economically and with greater uniformity of quality. According to the latest statistics nearly nineteen-twentieths of the cheese made in the United States and Canada is produced by factories. A number of interesting items may be stated. About 4,000 cheese factories receive milk from about 1,200,000 cows, and produce 281,972,324 pounds of cheese annually. New York has 1,314 cheese factories; Wisconsin, 1,286; Ohio, 320; Pennsylvania, 140; Michigan, 136; Illinois, 123; Iowa, 89; Vermont, 71; and Minnesota, 53. About 17,000,000 pounds of homemade cheese are produced, bringing up the total annual product to very nearly 300,000,000 pounds. It is worth at wholesale, that is to say, to the producer, from 11 to 17 cents per pound. In addition to domestic cheese, America imports about 32,000,000 pounds including 6,000,000 pounds of the celebrated Swiss cheese. We export 10,000,000 pounds. Roquefort cheese is made from the milk of sheep. Limburger cheese from Germany and Brie cheese from France are characterized by a strong odor. The milk of goats makes a very rich cheese.

It is not possible to say how much cheese is made in the world. The chief cheese exporting countries and the number of pounds exported in a recent year were:

Country.	Pounds.
Bulgaria	5,674,170
Canada	189,381,875
France	30,511,968
Germany	2,891,803
Italy	46,607,032
Netherlands	113,648,000
New Zealand	26,525,296
Russia	1,300,061
Switzerland	62,213,331
United States	10,341,335
Other countries	8,114,222
Total	497,209,093

The cheese buying countries with the number of pounds bought by each in the same year were:

Country.	Pounds.
Argentina	7,265,746
Australia	299,711
Austria-Hungary	9,114,789
Belgium	32,278,995
Brazil	3,631,012
Cape of Good Hope	4,761,140
Cuba	5,232,416
Denmark	1,784,642
Egypt	8,650,855
France	46,087,182
Germany	44,760,881
Italy	10,294,042
Russia	3,358,490
Spain	4,396,636
Switzerland	7,048,617
United Kingdom	259,833,392
United States	34,238,459
Other countries	21,296,477
Total	504,333,482

See BUTTER; CATTLE; ADULTERATION.

Cheese Cloth, a thin, slazy muslin used by dairymen for covering cheeses. It is on the market in varied qualities as regards fineness of thread and closeness of weave. It is bleached or unbleached. Butter cloth is an extra fine quality of cheese cloth. Cheese cloth is used also for curtains, for covering walls before papering, and for a variety of domestic purposes. The "gauze" used by surgeons in dressing wounds is cheese cloth conveniently folded and sterilized. Cheese cloth is dyed in plain colors for draperies and fancy work.

Chelsea, chĕl′sē, formerly a suburb, now a district of London, having somewhat

less than 100,000 people. It is situated on the north bank of the Thames and forms the river frontage of the Hyde Park district. Chelsea Hospital for old soldiers and the Sloan Botanic Garden are of interest. The latter is famed for fine old cedars. To Americans the chief interest of the neighborhood is its literary associations. Swift, Steele, Leigh Hunt, and George Eliot lived here. Locke and Addison lived hard by. Thomas Carlyle and his wife, Jane Welsh Carlyle, lived in a quiet street. A statue of Carlyle has been erected on the Chelsea Embankment. He was known as the "Sage of Chelsea." Chelsea was a favorite haunt of Henry VIII and his sixth queen, Catharine Parr.

Chemistry, the science of the composition of material things. Chemistry aims to answer such questions as, of what are water, candles, air, and grass, in short, all things made? Of how many elements is the world composed, and what is each like? It now enters largely into deciding what constitutes pure food. The subject of chemistry seems to have passed through five stages of development.

The ancients were fairly well agreed, the Greeks learning from the wise men of India, that the world is composed of four elements; namely, air, water, earth, and fire. Air is warm and moist, water is cold and moist, earth is cold and dry, fire is warm and dry. The air is the opposite of earth and water is the opposite of fire. They were also well acquainted with a number of practical operations, such as dyeing, glassmaking, soapmaking and working in gold, silver, copper, iron, lead, and tin. They were skillful in compounding cosmetics, salves, ointments, medicines, oils, paints, ink, perfumes, and poisons. The material of which all these substances, and many others, as wine and vinegar, in fact, the elements of which all substances are composed, were in their opinion, simply air, fire, earth, and water. Aristotle, the greatest gatherer and arranger of knowledge known to antiquity, added a fifth something, he did not know just what, but something outside of the four elements, a moving principle or force of some sort.

The second period in the history of chemistry is the age of alchemy. Wise men believed that iron was formed by water running into a crack of the heated earth; that water became air by fine subdivision; that fire turned to air when it went out; that air turned to mist, and mist turned to earth. Naturally they sought ways of turning cheap substances into valuable ones. The Egyptians, the Greeks, and the people of the Middle Ages were as fond of wealth as we are today. An enormous amount of making and carrying and buying and selling went on much as it does now. Gold and silver were prized. If all substances were at bottom fire, earth, air, and water, or, if not these, some other half dozen elements, and if one substance could be converted into its elements, and then by taking out part of one element or putting in more of another be changed into some other substance, why not become wealthy at a stroke by making gold and silver out of base metals? It is not surprising, then, that the alchemists of Egypt, Greece, Arabia, and of all Europe for a thousand years melted, heated, and stirred, added to and took from, trying to make gold out of sulphur or copper, and silver out of mercury. Many an enthusiast worked with furnace retort and crucible thinking himself on the verge of discovery. Many an imposter announced that the discovery was his. A feverish belief prevailed that the secret was out. If not known here, it certainly was known yonder. Fortunes were sunk in hopes of multiplying them. Needy princes borrowed and bestowed on alchemists that their coffers might be filled with streams of shining gold. Sir Walter Scott uses this delusion with good effect in describing the character of Dousterswivel in the *Antiquary*. Alchemy now seems to us a feverish craze, but in reality it was quite as sensible as many get-rich-quick schemes of the present day. The chief feature to be regretted is that men of science wasted their time so long and were diverted from making progress.

The third period of chemistry is noted for a theory that disease can be cured by chemicals. This theory came into vogue

shortly after the discovery of America, and was part of the general stir of that time. The theory in brief is that the human body is made up of certain chemical materials, and that disease and illness are due to wrong relations between these elements—too much of one or not enough of another—and that it is the proper business of the physician and chemist to discover and administer the medicine that will establish harmony. One writer thought that these constituents of the body were mainly mercury, sulphur, and salt. Too much sulphur gave rise to fever and the plague. An excess of mercury in the system was indicated by paralysis and depression, while diarrhoea and dropsy were due to an over supply of salt. In cases of dropsy the apothecary must take salt out of the system, or put in more mercury and sulphur. Of course, alchemy still ran its course; but the new theory of chemistry was a distinct step forward in that it proclaimed a higher motive. The chemist spent his time in making medicines rather than gold, and led the way to a more critical study of the nature of various plants and minerals with a view to their use as remedies. Chemical laboratories in the modern sense of the word, laboratories for investigation, date from this period.

The next period in the development of chemistry is the phlogistic period, during which a new theory of fire or combustion prevailed. According to this theory, fire is the outrush from burning stuff of phlogiston or fire material. Thus, when a piece of coal burns the fire material is escaping. When this has all escaped ashes remain. A piece of wood, then, is made up of ashes and of this phlogiston, or fire material. The more nearly a substance could be consumed the more nearly it was composed of pure phlogiston. If the phlogiston and the coal ash could be brought together again, a piece of coal would be the result. This theory was acceptable by reason of fitting into so many experiments. It was held by all the eminent scientists of that period. In one respect, however, the theory was not satisfactory, and that defect led to its downfall and to the ushering in of the period of modern chemistry.

Coal and wood heated in an open retort do indeed throw off a something, be it phlogiston or what we please to name it. Whether the wood chars slowly or bursts into a flame, all that is left is a trifle of ashes almost as light as air. With coal and many other combustible materials the result is the same and was satisfactorily explained by the theory that phlogiston or fire material had been driven out by heat; but when iron or any other metal, that was not vaporized by heat, was subjected to intense heat in an open crucible, just as wood was heated, the metal grew heavier instead of lighter. Instead of driving off phlogiston, heat seemed to have added something to the metal. It seemed as though heat drove the greater part of wood and coal out to unite with something in the air, and that heat invited that something in air to enter iron and other intensely hot metals. When oxygen, that something in the air, was actually discovered and described, even though by men who were unaware of the service they were performing, the foundation of modern chemistry was laid and has not been shaken seriously since. According to modern ideas, the mystery of fire which had been a puzzle for centuries is simply the uniting of the substance, usually some form of carbon, with the oxygen of the air. Metals, intensely heated, attract oxygen, thus gaining in weight.

Chemistry now recognizes, not four elements, but over twenty times that number. Air is a mixture of several elements, water is a combination of two elements, separately invisible; fire is the uniting of two elements; and earth contains all the elements. Instead of striving to change iron and copper into gold, and mercury into silver, chemists now teach that, although elements may be combined into an infinite variety of substances, gold and silver and iron and mercury and many other substances are simple elements, and that no element can be destroyed or changed into another element. At the very basis of modern chemistry is the theory that each element, and hence the world, is made up of infinitely small particles, called atoms; far too small to be seen singly even

John Dalton.

Justus Liebig.

Laurent Lavoisier.

John Berzelius.

under the most powerful microscope. These minute atoms are of different kinds —oxygen atoms, hydrogen atoms, copper atoms, iron atoms, gold atoms, sulphur atoms, silver atoms—all different. Atoms are exceedingly sociable and cling together in infinitely small groups called molecules. An atom will not leave the company of its associates unless thrown in with company it likes better. If similar atoms unite, we have an element, gold or oxygen, etc. If dissimilar atoms unite, as when atoms of hydrogen unite with half as many atoms of oxygen, we have a compound—in this case, water. An atom is unchangeable. Atoms of copper may shift about and be mixed as molecules today with zinc to form brass, and tomorrow be combined with chlorine to form a white powder; or they may combine with vinegar to form green, poisonous verdigris; but atoms of copper are still atoms of copper, and they are never anything else. The number of atoms of gold never changes. All the skill of man cannot make a gold atom or blot one out of existence.

The following table gives the names of elements with symbols and the theoretical weight of an atom as compared with the weight of an atom of hydrogen:

Name	Symbol.	Atomic Weight.
Actinium		
Aluminum	Al	26.9
Antimony	Sb	119.5
Argon	Ar	40.?
Arsenic	As	74.45
Barium	Ba	136.4
Beryllium	Be	9.0
Bismuth	Bi	206.5
Boron	B	10.9
Bromine	Br	79.34
Cadmium	Cd	111.55
Caesium	Cs	131.9
Calcium	Ca	39.8
Carbon	C	11.9
Cerium	Ce	138.0
Chlorine	Cl	35.18
Chromium	Cr	51.7
Cobalt	Co	58.55
Columbium	Cb	93.0
Copper	Cu	63.1
Erbium	E	164.7
Ethereon?		
Fluorine	F	18.9
Gadolinium	Gd	155.8
Gallium	Ga	69.5
Germanium	Ge	71.9
Glucinum	*See Beryllium*	
Gold	Au	195.7
Helium	He	4.?
Hydrogen	H	1.0
Indium	In	113.1
Iodine	I	125.89
Iridium	Ir	191.7
Iron	Fe	55.5
Krypton	Kr	59.?
Lanthanum	La	137.6
Lead	Pb	205.36
Lithium	Li	6.97
Magnesium	Mg	24.1
Manganese	Mn	54.6
Mercury	Hg	198.5
Molybdenum	Mo	95.3
Neodymium	Nd	142.5
Neon	Ne	20.?
Nickel	Ni	58.25
Niobium	*See Columbium*	
Nitrogen	N	13.93
Osmium	Os	189.6
Oxygen	O	15.88
Palladium	Pd	106.2
Phosphorus	P	30.75
Platinum	Pt	193.4
Polonium		
Potassium	K	38.82
Praseodymium	Pr	139.4
Radium	Ra	225.?
Rhodium	Rh	102.2
Rubidium	Rb	84.75
Ruthenium	Ru	100.9
Samarium	Sm	149.2
Scandium	Sc	43.8
Selenium	Se	78.6
Silicon	Si	28.2
Silver	Ag	107.11
Sodium	Na	22.88
Strontium	Sr	86.95
Sulphur	S	31.83
Tantalum	Ta	181.5
Tellurium	Te	126.5
Terbium	Tr	158.8
Thallium	Tl	202.61
Thorium	Th	230.8
Thulium	Tm	169.4
Tin	Sn	118.1
Titanium	Ti	47.8
Tungsten	W	182.6
Uranium	U	237.8
Vanadium	V	51.0
Xenon	X	128.?
Ytterbium	Yb	171.9
Yttrium	Y	88.3
Zinc	Zn	64.9
Zirconium	Zr	89.7

See also PURE FOOD; WILEY.

Chemnitz, kĕm'nits, the chief manufacturing town of Saxony. It is situated on the river of the same name fifty miles southeast of Leipsic. It is called the Manchester of Saxony. It leads the world in the making of hosiery. There are also

large manufactures of calico, silks, woolen goods, and jute bags. Chemnitz lies at the foot of the Erzgebirge, and is a center for mining supplies and machinery. The population has grown rapidly since the Franco-German war and is now over 200,000. See SAXONY.

Chenille (she-nēl′) **Cloth,** a textile in use for curtains, portieres, and table covers. It is woven with a very fine cotton warp and a fringed cotton, wool, or silk thread for the weft. This gives a soft, fur-like effect. The fabric takes its name from the furry coat of the caterpillar, of which chenille is the French name. Until about 1890 Scotch and Austrian manufacturers had a monopoly of the American chenille cloth trade. The material was woven on hand looms and was necessarily expensive. Since that time power looms have been introduced for its manufacture and American factories now produce a superior and less costly cloth. The fringed thread or filling used for the weft is called "fur" or "chenille." It is not an ordinary thread, but a sort of cord made in the loom. Two or three warp threads of wool or cotton are used. The fine silk weft threads are allowed to project at either side beyond the warp, and are afterward cut. By twisting, this narrow web is made to assume the shape of a cord with the wefts projecting in all directions from the central warp threads. When figures are to be produced, this weft is dyed in various colors at short intervals or steps, arranged with such nicety that, as the weaving progresses, the colored parts fit into each other precisely, thus forming beautiful patterns. Silk chenille is used for a variety of fancy work. It is made in many sizes, from a thread scarcely larger than a fine yarn to that one-third of an inch in diameter. The larger varieties are "filled" very closely with the silk weft and are evenly trimmed.

Cheops, kē′ŏps, the Greek name of the Egyptian king Khufu, who lived about 2500 B. C. and is famous as the builder of the Great Pyramid. He was the second king of the fourth dynasty of the Old Egyptian Empire. Cheops has been identified with Suphis or Shufu, a name appearing on certain Egyptian monuments. He is mentioned by some four or five other names in the works of early historians. The accounts of his character and life differ almost as much as his names. By some he is depicted as an impious man who closed temples and forbade the worship of the gods. The monumental inscriptions, however, represent him as building temples and repairing shrines. Whatever his life may have been, his tomb has stood for thousands of years, the greatest structure on earth. See PYRAMID.

Cherokee, chĕr-ō-kē′, a tribe of North American Indians belonging to the Iroquois family. They were formerly in possession of the upper valley of the Tennessee and Cumberland Rivers. They lived in log huts and had about sixty-four towns. They sided with the British during the Revolution, but at its close acknowledged the sovereignty of the United States. After the war they began to move westward. Those in Georgia were driven out by the whites with the aid of government troops. In 1808 the Cherokee nation was organized. A tract of land in Indian territory was set aside for them. The Cherokees proved very teachable, schools and missions were established among them, they learned various trades and several kinds of manufacturing, and up to the outbreak of the Civil War held slaves. There were Cherokees in both the Northern and Southern armies, and by both armies their country was ravaged. In 1906 the Cherokees and the four other civilized tribes terminated their tribal organizations and were received as citizens of the United States. See INDIAN TERRITORY; CHICKASAWS; CHOCTAWS; SEMINOLES; CREEKS.

Cherry, a fruit tree belonging, with the plum, to the rose family. Our garden cherries are from European stock. Cherries are cultivated as far north as the southern part of Norway. In Germany and other continental countries cherry trees line the roadsides. The fruit is sold to a contractor. The pickers use long step-ladders in their work; they refer tourists to the foreman who very politely sells them at a moderate price as many large, black, meaty cherries as they want to pay

for. We have several American wild cherries. The black cherry is a large tree in many localities. The fruit is bitter. The wood is used for expensive furniture. The wood of the red cherry also is desirable, but the tree is too small for lumber. A dwarf sand cherry sometimes fruits when less than a foot high. The choke cherry, with cylindrical clusters, comes in the fall after birds have taken the red cherries, and is welcome in spite of its puckering qualities.

Several proverbial expressions show that cherries have had a place in homely life for centuries. "As like as two cherries," is expressive of similarity. "Making two bites of a cherry," is a sermon on unnecessary effort. "As red as a cherry," and "cherry red," indicate the favorite kind of cherry. *Cerise,* the name of an exquisite color, is French for cherry.

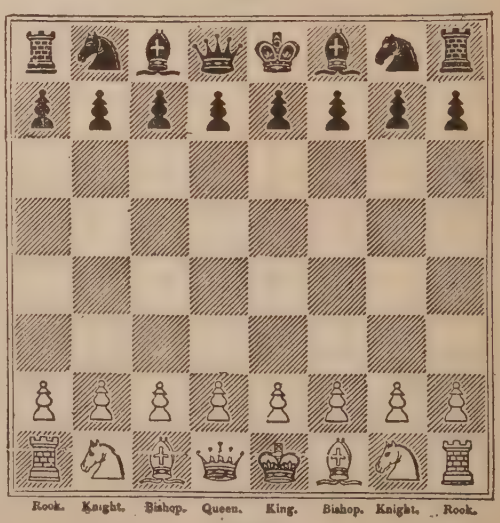
Sweet cherries and sour cherries are cultivated thoughout the apple states as dooryard and orchard fruits. In California cherries are subordinated to other fruits, yet 300 cars of fresh cherries and 170,000 cases of canned cherries are shipped during the season.

Chesapeake Bay, the largest inlet on the Atlantic Coast. It is 200 miles long and from 4 to 45 miles in width. It lies within the borders of Virginia and Maryland. The promontories of Capes Charles and Henry at its entrance are twelve miles apart. The bay is of great depth. It receives the waters of the James, the York, the Rappahannock, the Potomac, the Susquehanna, and many smaller streams. Newport News, Alexandria, Washington, Annapolis, and Baltimore are situated on its borders, or at the head of estuaries. The waters of the Chesapeake are famous for the finest oysters and terrapin in the world. The reedy shallows are the haunt of innumerable waterfowl, including the celebrated canvasback duck. Shooting is carried on chiefly from blinds or reed-covered boats. See BALTIMORE; OYSTER; POTOMAC.

Chess, a game of skill played on a checkered board of sixty-four squares. The game is said to be of Hindu origin. It was played in Hindustan 5,000 years ago. The Arabs learned the game from the Persians and introduced it into Spain and western Europe. The board resembles a checkerboard; all the squares are used. Each player has sixteen men, consisting of eight pawns and eight pieces, known as the whites and blacks. The pieces are the king, the queen, two bishops, two knights, and two castles, or rooks. They are arranged as shown below.

The pieces on the queen's side are known as the queen's bishop, queen's knight, and queen's rook; those on the other side bear the king's name. The pawns are named by the pieces in front of which they stand. Thus we have the king's pawn, the queen's pawn, the king's rook's pawn, the queen's bishop's pawn, etc. The white queen stands at the left of her king; the black queen at the right of her king; so that corresponding pieces are opposed to each other. In chess, men may be taken, not by leaping over them, as in checkers, but by occupying the space in which they stand. The intricacy of the game is increased greatly by the varying powers possessed by the different men.

A pawn moves forward only. The first move may be for one or two squares; subsequent moves for one square only. A pawn may take any man belonging to the



CHESS BOARD.

enemy by moving one space diagonally to the square occupied by that man. A knight has eight moves,—two squares forward, and one square sideways in either direction; two squares backward and one square sideways in either direction; two squares to the left and one square either forward or backward; and two squares to the right and one square either forward or backward. As a knight may leap over any intervening man it is evident that he can remove a man of the enemy from any one of eight spaces.

A bishop moves angularly any number of spaces forward or backward on the color on which it was originally placed.

The rooks move any number of spaces, as far as the line is clear, either forward, backward, or sideways.

The queen has the moves both of bishops and of rooks.

The king may move in any direction, one square at a time (except in castling). Each king is permitted to castle once during the game. The player moves his rook to the square next the king, then leaps his king over the rook to the square on the other side.

A player is not compelled, as in checkers, to take a man within reach; but may refuse, if to his own advantage. When the king is situated so that he can be taken at the next move by an adversary's man, he is said to be in check. If the player be unable to avoid the attack by taking the attacking man, interposing one of his own men, or retiring the king to a place of safety, he is checkmated, and loses the game. Any man properly situated may attack the opposing king. The king is also able to take any man of the enemy. If neither player is able to checkmate his opponent's king, the game is drawn.

It is not practicable to explain the rules of chess in a brief article, but a full explanation with illustrative games may be found in Hoyle's Book of Games.

Chester, an ancient English city six miles on the road from Liverpool to London. It stands on a sandstone hill. It is laid out in the form of an oblong, and is surrounded by a wall of sandstone blocks seven feet in thickness and wide enough on top for two or three persons to walk abreast. Chester is one of the few English cities where the old medieval walls are still practically in complete repair. The name is from the Latin *castra,* meaning camp. Dorchester, Manchester, etc., are English names of similar origin. Chester is, indeed, an old Roman fortification, as indicated by the discovery of coins, inscriptions, a statue of Pallas, Roman altars, and the like.

Next to the Roman antiquities in interest is Chester Cathedral. The ground plan is that of a cross. The main body is 355 feet long by 75 feet wide. The transept is 200 feet long. The vaulting rises to a height of 78 feet. The exterior has notable ranges of windows and is marked by a square central tower. The cathedral is of special interest in that it combines every variety of English medieval architecture from Norman to the latest pointed style. Architectural contrasts have been combined attractively and create an agreeable impression.

The two main streets of Chester cross each other at right angles and terminate in massive gates. These streets were excavated by the Romans to a depth of eight or ten feet below the general level. Rows of houses, half timber, half mortar work, with curiously carved gables, are reached by steps from the street below. The upper story of each house projects about sixteen feet over the lower story, and is supported by pillars, thus forming a covered colonnade or footway running the entire length of the street. All in all, Chester is one of the most peculiar and interesting cities in England. Tourists landing at Liverpool run to Chester and stay over for a night on their way to London. The town is the seat of Cheshire County, a rich agricultural region, famous for Cheshire cheese. The population of the city in 1908 was about 39,000.

The name of *Chester Plays* is given to a collection of mystery plays founded on scriptural subjects. They were represented by the guilds of Chester at Whitsuntide, and ran three days. These plays appear to belong to the same generation as the Passion Play at Oberammergau.

See ENGLAND.

Chesterfield, Earl of (1694-1773), an English officeholder. He held various positions under George I, as gentleman of the bedchamber to the Prince of Wales, ambassador to Holland, and lord lieutenant of Ireland. He wrote essays, critical and humorous, as well as a series of letters to his son,—little essays full of worldly wisdom, shrewd advice, caustic comment, and insincerity. Though unprincipled, he was eloquent in his manner, and posed as a patron of letters. He pretended to encourage Samuel Johnson in the publication of his dictionary. When Dr. Johnson became convinced of the earl's duplicity he finished the work without his aid. At its publication Chesterfield attempted to revive the old relationship. Dr. Johnson published an open letter to him, which is considered the most scathing and caustic of the sort in literature. A single sentence must suffice by way of quotation:

> Is not a Patron, my Lord, one who looks with unconcern on a man struggling for life in the water, and, when he has reached ground, encumbers him with help?

Lord Chesterfield was not without political penetration. Concluding a letter prior to the French Revolution, he writes, "In short, all the symptoms which I have ever met with in history previous to great changes and revolutions in government now exist and daily increase in France."

See JOHNSON, SAMUEL.

Chestnut, a nut-bearing tree closely related to the oaks and beeches. A flattening of the sides of the fruit is due to their clustering two to three in a cup. The European chestnut is larger and coarser in taste than ours. The Japanese nut is smaller and of inferior quality. The American chestnut is a straight forest tree, 100 feet in height, with cream colored, heavy scented flowers, accused of causing hay fever. The flowers appear in June and July. After heavy autumn frosts the rough prickly burs, which correspond to acorn cups, open and "the sound of falling nuts is heard." Two dwarf chestnuts, or chinquapins, the one, in the main, eastern, and the other southern, bear a solitary nut in each bur. They are earlier than the tree chestnut. They are delightfully sweet and wholesome. In southern Europe chestnuts are ground into a coarse meal for bread. The chestnut tree is long lived. A very large tree on Mount Etna has a girth of 208 feet. Chestnut timber lasts like oak. The bark is valued by the tanner. In allusion to a worm-eaten chestnut, the term "chestnut" is applied to a worn out pun, stale joke, an old anecdote, or to a statement repeated so often as to lose its hold on the hearer's interest. See NUTS.

Cheviot Hills, a mountain range on the border line between Scotland and England. A central peak, to which Scott refers in his Marmion as "Cheviot's mountain lone," is 2,676 feet high. It stands 500 feet in the clear above Carter Fell, the next in height. The head waters of the Liddel, the Tyne, and some of the branches of the Tweed have their sources here. It is a fine grouse country, and, until recently, a haunt of the golden eagle. The upland pastures have given rise to a fine breed of sheep called cheviots, whence the name for a loosely woven woolen cloth used for suitings. The region is celebrated in story and song as the scene of border forays. Scott has occasion to describe its fastnesses a number of times in his tales. The celebrated border ballad of Chevy Chase, found in Percy's *Reliques,* relates to the hunting or chase in the mountains of the Cheviot:

> God prosper long our noble king,
> Our liffes and safetyes all;
> A woefull hunting once there did
> In Chevy-Chace befall.

Chevy Chase, chĕv'ĭ chās, a famous old English ballad of border warfare. The incidents recounted are not regarded as historical, although the story is probably founded on some actual encounter between Percy and Douglas. It has been confounded with the Scotch ballad, *The Battle of Otterbourne,* as the events celebrated are similar. There are two versions of the ballad. The older one is sometimes called *The Hunting of the Cheviot.* Both versions may be found in Percy's *Reliques.* The name Chevy Chase has been variously explained, as a corruption of a French word meaning *a raid,* and as derived from the name Cheviot Hills, and meaning the Cheviot hunting ground. See BALLAD.

Cheyenne, shi en′, a tribe of Indians belonging to the same family as the Shawnees, Ojibways and Blackfeet. Originally they lived on the Cheyenne River in South Dakota, but were driven westward by the Sioux. When first known they were agriculturists and lived in settled villages. After they obtained horses they became expert riders. Because of unjust treatment they became bitter enemies of the whites and stubbornly resisted the government. About 1,200 live on reservations in Montana and about 2,000 live in Oklahoma. See INDIANS.

Chicago, Ill., the metropolis of the "Middle West," the second city on the American continent and the fourth city in the world, is situated at the head of Lake Michigan on the western shore, along which it extends for 24 miles. It is 911 miles from New York and 2,274 miles from San Francisco. The location is most advantageous for the development of the great transportation, commercial and industrial enterprises that have caused this city's unprecedented growth. In 1840 Chicago was an insignificant trading post of 4,449 inhabitants. In 1920, its population was 2,701,212. No other city has grown so rapidly.

GENERAL PLAN. Chicago occupies a tract of level land rising only a few feet above the lake. The outline is rectangular, the greater length extending along the lake shore. The greatest breadth is 10½ miles, and the area a little over 200 square miles. The city is regularly laid out. The Chicago River, with its small northwest and southwest branches, divides the city into three areas known respectively as the North Side, the South Side and the West Side. The downtown section of the South Side is the location of the chief banks, retail stores, office buildings, hotels and theatres. The elevated railways encircle the business section, forming the "Loop," the name by which this part of the city is known.

Grant Park extends along the lake front from Randolph Street to Park Row, a distance of about a mile. Bordering this park on the west is Michigan Boulevard, the first street west of the lake, and one of the most beautiful thoroughfares in the world. On the west side of the boulevard are some of the most noted buildings in the city, including the John Crerar Library, the Public Library, the University Club, which is the most perfect example of Gothic architecture in America, the Gas Building, Orchestra Hall, the Railway Exchange, the McCormick Building, the Auditorium Hotel and Theatre, the Congress and the Blackstone hotels. The Art Institute, the only building in Grant Park, is a fine structure in Modern Renaissance. South of Grant Park, at the foot of Twelfth street Boulevard, is the New Field Museum. State Street, the third street west of the lake, is the center of the shopping district.

BUILDINGS OF NOTE. The retail store of Marshall Field & Co., occupying one entire block, bounded by Randolph, State, Washington Streets and Wabash Avenue, and having 40 acres of floor space, is the largest and best equipped retail store in the world. The combined City Hall and County Building is a massive and commodious structure of steel and granite and one of the finest public buildings in America. The Federal Building, occupying the block bounded by Clark, Adams, Dearborn and Jackson Streets, is in the form of a cross. The Coliseum can seat 14,000 people and is used for large conventions and exhibitions. The Masonic Temple (21 stories) is the tallest building in the city. The great hotels, in addition to those already mentioned, are the La Salle, the Sherman, the Morrison and Palmer House. The largest family hotels are the Edgewater Beach Hotel and the Chicago Beach Hotel. The Terminal station of the Chicago & Northwestern Railroad and the La Salle Street station are among the best passenger stations in the country.

CITY TRANSPORTATION. Chicago has over 1,000 miles of street railway and there are four lines of elevated railway connecting the north, south and west sides with the downtown district. All railroads entering the city maintain an adequate suburban service. The distribution

of freight to the great department stores and other buildings in the Loop is facilitated by a system of tunnels, 60 miles in extent which connect these buildings with the chief freight depots.

Parks and Boulevards. Chicago has about 200 small parks and playgrounds, 14 large parks and 12 bathing beaches. The total area of the park system is about 4,600 acres. Lincoln Park (517 acres), extends along the lake shore for nearly two miles on the north side. It is equipped with baseball grounds, tennis courts, lagoons for boating, and bathing beaches. It is noted for its many beautiful statues, and especially for its zoological gardens in which are found about 1,800 specimens of animals, birds and reptiles. The Academy of Natural Sciences is at the main entrance.

Jackson Park (543 acres), extending along the lake shore on the south side, was the site of the World's Fair in 1893. It is equipped with a golf course, ball grounds, tennis courts and bathing beaches. This park is connected with Washington Park (317) acres on the west by the Midway Plaisance, a magnificent boulevard 660 feet wide. A magnificent boulevard connects Washington Park with Marquette Park (323 acres), also on the south side, and with Douglas (182 acres), Garfield (187 acres), and Humboldt (206 acres) parks on the west side. All these parks are provided with recreation grounds, lagoons, flowers, statuary and beautiful walks and drives. Garfield Park has the largest conservatory in America. The small parks and playgrounds are scattered through the city so as to provide breathing space where most needed.

Over 70 miles of boulevards connect the parks of the city and also join beautiful drives leading in all directions into the open country. Bordering Chicago on the west and north is the Cook County Forest Preserve, containing over 15,000 acres of fascinating woodland.

Water Supply and Drainage. The city is supplied with water from Lake Michigan, by means of an extensive system of tunnels, cribs or intakes and pumping stations. The cribs are located from two to four miles from the shore, each is connected with a pumping station by a tunnel under the lake.

In 1900 the Chicago Drainage Canal was completed at a cost of $50,000,000. This canal receives the sewage which formerly flowed into the lake, and conveys it to the Kankakee River at Joliet, from whence it is conveyed to the Mississippi.

A Railway Center. Chicago is the largest railway center in the world. Thirty-nine railways, including twenty-two great railway systems, and forty per cent of the railway mileage of the country terminate in the city. There are over 100 railway yards for receiving, transferring and dispatching shipments. Over 1,340 passenger trains and 192,000 passengers arrive and depart daily from Chicago railway stations.

Water Transportation. Chicago is the largest lake port in the world. It has over 100 miles of water front, more than fifty miles being equipped with dock and railway facilities. Most of the docks are along the river, which has been dredged to a depth that admits the largest lake steamers. In normal years over 6,000 ships enter and clear the port. The Municipal Pier, extending half a mile out into the lake on the north side of the river is used by passenger and freight boats. The pier cost about $5,000,000 and is over half a mile in length. Its eastern end is devoted to recreational purposes.

Industries. Chicago is a convenient meeting place for lumber, iron ore, and other raw materials and the fuel necessary for their manufacture, consequently it is one of the great manufacturing centers of the country. The manufacturing plants are located chiefly along the river and on the West side. Meat packing is the leading industry and the stockyards, located on Halsted street, from 39th to 43rd streets, are famous the world over. Here are the largest meat-packing houses in the world. Other important industries include the manufacture of foundry and machine shop products, iron and steel, men's clothing, agricultural implements, and printing and publishing.

Art Institute

Post Office

CHICAGO

Chicago is a great commercial center. Its grain and lumber markets lead the world and its wholesale and retail trade are second only to those of New York.

INSTITUTIONS. Chicago has over 1,000 churches, a large number of hospitals and other charitable institutions. The leading hospitals are the Cook County Hospital, the Municipal Contagious Hospital, the Chicago Lying-in Hospital, the Michael Reese, St. Luke's, Wesley, Mercy, Presbyterian, Alexian Brothers and Augustana, The most noted social settlements are Hull House in the Ghetto district, Chicago Commons, Chicago University Settlement and Northwestern University Settlement. The United Charities and Bureau of Hebrew Charities, each maintains a corps of trained workers to aid the suffering and needy.

EDUCATION. The City maintains an adequate system of public schools, ranging from the kindergarten to the Chicago Normal School. Chief among the higher institutions of learning is the University of Chicago, located on the Midway Plaisance, and enrolling over 9,000 students. Northwestern University, at Evanston, has its schools of Commerce, Dentistry, Law and Medicine in Chicago. Among the other institutions worthy of special notice are Armour Institute, Lewis Institute, the Y. M. C. A. College, St. Ignatius College, Loyola University, the Chicago Musical College and the American Conservatory of Music. The Art Institute contains a large collection of paintings, statuary and antiquities, an excellent art library and a lecture hall. It maintains one of the leading art schools of the country, having an enrollment of about 2,500 pupils. The Field Museum contains extensive collections of minerals, natural history specimens, anthropological specimens and antiquities.

LIBRARIES. The Public Library, with over 900,000 volumes, maintains branches and deposit stations in all parts of the city. The Crerar Library, located in its new home on Michigan Boulevard and Randolph Street, and the Newberry Library, located in a beautiful granite building on North Clark Street and Walton Place, are reference libraries. The Library of the University of Chicago, has over 500,000 volumes.

HISTORY. Joilet and Marquette were the first white men to visit the site of Chicago (1673). In 1804, Fort Dearborn was built. John Kinzie was the first white settler. The Indian massacre of 1812 caused the fort to be abandoned temporarily. In 1840, Chicago was a city of 4,449 inhabitants. The Galena & Chicago Union Railroad and the Illinois & Michigan Canal were completed in 1848, and from that time the city's growth was rapid. A fire devastated the business district in 1871, but it was soon rebuilt. The later history of the city is that of its substantial growth in keeping with the development of the surrounding country and the Northwest. In 1893, Chicago entertained visitors from all over the world during the World's Columbian Exposition.

The census of 1920 gives Chicago a population of 2,701,202. The residents represent nearly forty European and Asiatic countries grouped as follows:

Americans (including persons whose parents are not foreign-born)	699,554
Germans	563,708
Irish	240,560
Poles	173,409
Swedes	143,307
Russians	123,238
Bohemians	116,549

These are the large groups, but thirty other nationalities are included in the list.

The Chinese number 1,801, and the Japanese only 257.

Chicago University.

See CHICAGO.

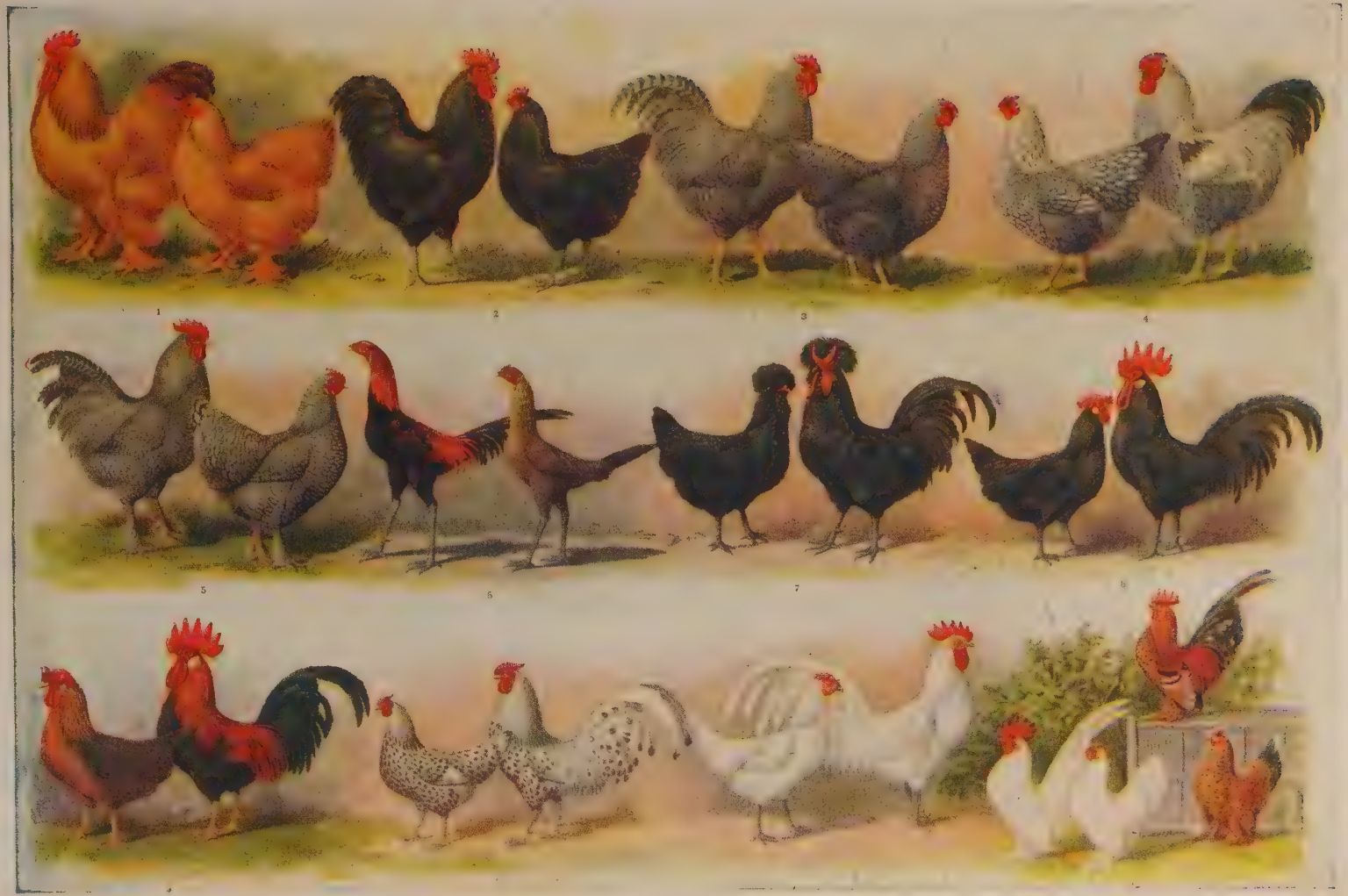
Chickadee, or **Titmouse,** a small bird of the nuthatch family. There are within the boundaries of the United States some seventeen species of titmice, with nearly as many races or subspecies, so that there is no portion of the country that does not have one or more forms. The western coast region is peculiarly rich in representatives of this family. The chickadee of literature, or the black-capped chickadee, is a trifle over five inches in length. The top or back of the head and the throat are shining black. Other parts are gray or whitish. It ranges from the mountains of North Carolina to the northern timber line of British America, retiring southward on the arrival of winter. It builds a

tiny nest of moss and plants down in a hole in an old stump or tree, from the height of one's head up to fifteen feet. There are from five to eight white eggs, speckled at the larger end with cinnamon spots. Speaking of its identification, Chapman says, "When most birds were strangers to me, I remember thinking what a blessing it would be if every one spoke his name as plainly as does this animated bunch of black and white feathers. No need of a textbook to discover his name; with winning confidence he introduced himself, and probably for this reason he has always been my best friend among birds." The chickadee is a constant resident. Few see the little bird in summer, but later the wood chopper seldom fails to see this bunty little friend hunting his frozen dinner of insects' eggs and larvae in the fresh pile of brush and branches. His busy *day, day, day,* and cheery *Chickadee, chickadee, dee, dee, dee,* are one of the delights of a sunny winter's day in the woods.

The examination of 289 stomachs of the chickadee shows that its food consists of 68 per cent of animal matter (insects), and 32 per cent of vegetable matter. The former is made up of small caterpillars, and moths and their eggs. Prominent among the latter are the eggs of the tent-caterpillar moths, both the orchard and forest species. As these are two of our most destructive insects, the good done by the chickadee in devouring their eggs needs no comment. During the winter months, the chickadee's food is made up of larvæ, chrysalids, and eggs of moths, varied by a few seeds, but as spring brings out hordes of flying, crawling, and jumping insects, the bird varies its diet by taking also some of these. Flies and bugs (*Diptera* and *Hemiptera*) are the favorites until the weather becomes quite warm, when beetles and small wasps are also taken. Among the bugs may be mentioned the plant lice and their eggs which are eaten in winter. The beetles nearly all belong to the group of Rhyncophora, or snout beetles, more commonly known as weevils. These insects are mostly of small size, and nearly all of them are known as pests by the farmer or fruit raiser. Seventeen of them were found in one stomach. The plum curculio and the cotton boll weevil may be taken as fair samples. Grasshoppers do not at any time constitute an important element of the food of the chickadee as they are evidently too large for so small a bird; moreover they are for the most part terrestrial insects, while the bird is essentially arboreal. Small wasps and ants are eaten to some extent. Spiders constitute quite an important element of the food and are eaten at all times of the year. The birds evidently find them hibernating in winter as well as active in summer. The vegetable food of the chickadee consists largely of small seeds, except in summer when they are replaced by pulp of wild fruit. The wax from the seeds of poison ivy (*Rhus radicans*) is eaten during the winter months, but the seeds themselves are not taken. In this respect the chickadees differ from most other birds which swallow the seeds whole.—U. S. Department of Agriculture.

Chickamauga, chĭk-a-maw′ga, a creek in northern Georgia and Tennessee. It empties into the Tennessee River near the city of Chattanooga. September 19th and 20th, 1863, it was the scene of a bloody battle. General Bragg, reinforced by Longstreet, fought the three corps of Rosecrans under Thomas, McCook, and Crittenden, and penned him up in Chattanooga. Had it not been for Thomas, "the Rock of Chickamauga," the Union forces would have fared ill. Over 100,000 men were engaged. Fully a third of the number were reported as killed or missing. Some brigades lost over half of their men. The battle-ground, covering an area of eleven square miles, has been ceded to the general government by the states of Georgia and Tennessee for a national park. It was dedicated in 1895, on the anniversary of the battle. A large number of monuments, memorials, and marks have been erected already to commemorate the valor of both sides.

Chickasaw, a branch of Indians allied to the Creeks, Seminoles, and Choctaws. The whites under De Soto found them occupying the headwaters of the Tombigbee and Yazoo rivers, with a trail to the Mississippi River at Memphis, 160 miles away. As the country settled up they sided with the English against the French. They were induced to cede one tract of land after another. The last cession was dated 1834. They were removed to the eastern part of the Indian Territory, where they form the Chickasaw nation, one of the federated Indian tribes of the territory. Even here, over 100,000 whites have crowded in to their territory. As the Chickasaws number less than 6,000 the result is not difficult to foresee, though at present many are farmers and stock-raisers living in a fair degree of comfort. See INDIANS.



CHICKENS

1. Buff Cochin
2. Black Langshan
3. Barred Plymouth Rock
4. Silver-penciled Wyandotte
5. Belgian
6. English Game
7. French
8. Black Minorca
9. Italian
10. Silver-laced Hamburg
11. White Leghorns
12. Bantams

Chicken, a common barnyard fowl. All varieties of chickens are thought to have originated from the jungle fowl of southeastern Asia. There are eighty-seven standard varieties raised in this country. They are divided into several classes, which, for practical purposes, may be reduced to four, as follows:

1. The general purpose, or American chicken. Of these the Plymouth Rock is celebrated for its graceful figure and upright carriage. It is a very handsome bird with fine grey and white plumage. The Wyandottes are also fine birds, not quite so large as the preceding. These two kinds, all qualities considered, are the most desirable where appearance, good habits, abundance of eggs, and dressed poultry are desired. The Plymouth Rock originated in Massachusetts; the Wyandotte in New York.

2. The Brahmas, Cochins, and Langshans, introduced from Asia, are heavy, hardy breeds, considered very desirable for the table. They are somewhat larger than the American chickens, but are not as good layers.

3. The so-called Mediterranean class, including the Leghorns, Minorcas, and Spanish chickens, are abundant layers. The Leghorns are probably the most prolific chickens known. They are light eaters and are active and healthy. Their eggs are smaller than those of American chickens, and they are considered less desirable for the table.

4. Ornamental breeds, Bantams, Japanese, Polish, and Games. The bantam is remarkable for its small size and exceedingly pugnacious disposition. The gamecock, of which there are several varieties, is a tall, gaunt bird, armed with a large spur. It is reared chiefly for cock-fighting. It is still kept for that purpose in some parts of this country. It is a popular source of amusement in Malasia and many other regions.

Few realize the enormous proportions to which the chicken industry of the world has risen. Speaking for the United States alone, the last census reported 233,598,085 chickens. In eggs and poultry the chickens of this country for that year yielded $280,000,000. Cotton, our most valuable field crop, was worth but $260,000,000. The American hog brought but $186,000,000 that year. The eggs, if crated, would have filled the refrigerator cars of a train 900 miles long. A good hen lays 200 eggs a year.

Skillful raisers now depend on incubators to hatch their chickens. In this way "spring" chickens may be put on the market the year around. Eggs require twenty-one days to hatch.

One man in Ohio has a contract to furnish 300 spring broilers and 100 dozen eggs daily, year in and year out. He has 30,000 Plymouth Rocks, 30 incubators, and acres of buildings. A chart of the chicken and corn-raising industries of the United States shows that the two are closely related. The corn belt is also the poultry belt.

Chicken Pox, a contagious disease of childhood, accompanied by an eruption of the skin and often by fever. The disease seems to bear some resemblance to a mild form of small-pox, but is considered to be without danger if the patient remains quiet for a few days. A child seldom takes chicken pox a second time.

Chicle, chĭkl, a gum manufactured from the sap of the sapodilla tree. This tree is found throughout tropical America. The chicle industry is confined largely to southern Mexico and Yucatan. Under favorable conditions the tree grows to a height of seventy feet. During May and June camps are established in the sapodilla forests, and preparations are made not unlike those for making maple sugar. The natives make V-shaped cuts in the bark of the tree. A crude milky sap is collected. It is carried in pails to large kettles and boiled down. An average tree will yield about six pounds of the gum, but must not be tapped oftener than once in three years. Well prepared chicle is nearly white when fresh and clean. It is a tough, firm, aromatic, elastic gum. The best quality is worth a dollar a pound in camp. In 1908 Yucatan and Mexico supplied the United States with 4,000,000 pounds of chicle. It is used in the manufacture of high grade chewing gum. Up

to the end of the year named about 30,000,000 pounds of chicle had been imported by the United States. See GUMS.

Chicory, a perennial herb belonging to the composite family. It is a native of Europe. The leaves are not unlike those of a dandelion, but the plant sends up a tall, branched, flowering stem. The flowers vary in color, sky-blue predominating. Like the dandelion it has escaped from cultivation and is found along the roadside. It is of value chiefly for a long, carroty root, much used as a substitute for coffee and as an adulterant of ground coffee. For this purpose the roots are washed, sliced, and dried in kilns. Chicory is put on the market, ground and unground. It is raised easily from the seed. From six to ten tons of roots are expected to the acre. American wholesalers import from 2,600,000 to 4,000,000 pounds of chicory root annually. See COFFEE.

Chief Justice, the presiding justice of the supreme court of the United States. The first chief justice was John Jay, who served 1789-1791. His successors were: Oliver Ellsworth, 1796-1800; John Marshall, 1801-1835; Roger Brooke Taney, 1836-1864; Salmon Portland Chase, 1864-1873; Morrison R. Waite, 1874-1888; Melville W. Fuller, 1888-1910; Edward D. White, 1910. Salary, $13,000.

Child Labor, bodily toil of children in gainful occupations. There is a mistaken notion that we are so prosperous in America that children are not called upon to work. The United States Census Bureau issued a bulletin in 1907 in which the total number of American children between the ages of ten and fifteen inclusive was placed at 10,502,000. Of this number, 1,939,000 were engaged in breadwinning. The showing is a little more favorable than that of 1900, but the question of how early and under what circumstances children shall be allowed to work is far from settled.

Investigation and legislation began in Europe. The tendency of employers to overwork children for the sake of profit became apparent to the world during the industrial revolution or shift to the factory system 1760-1830. Conditions in England at that time are described by West in his *Modern History:*

> The new factory system proved fatally cruel to women and children, who for a long time made up the greater portion of the employees. Parish authorities had the power to take children from pauper families, in order to apprentice them to employers; and destitute or dissolute parents sold their offspring into such service by written contracts. In the early years of the century gangs of helpless little ones from six and seven years upward, secured in this way, were auctioned off, thousands at a time, to great factories, where their life was a ghastly slavery. They received no wages; they were clothed in rags; their food was insufficient and of the coarsest kind, and often they had to eat standing at their work while the machinery was in motion. They were driven to work from twelve to sixteen hours a day, often by inhuman torture; they had no holidays; and the few hours for sleep were spent in filthy beds, from which some other relay of little workers had just been roused. Schooling or recreation there was none; and the poor little waifs—girls as well as boys—grew up, if they lived at all, amid shocking and brutal immorality. When one batch of such labor had been used up, another was always ready, at practically no cost; and the employers showed a disregard for even the mere physical well-being of their "white slaves," such as no negro-driver could ever afford toward his costly black chattels.

The first child labor law of the world was passed by Great Britain in 1802. It passed Parliament in the face of vehement opposition. It forbade the employment of children in cotton and woolen mills *more than twelve hours a day.* In 1819 Parliament tackled the problem again and forbade the employment of *children under nine* in factories, but left the hours of work for ten-year-old children at twelve per day. This seems a callous treatment of childhood, but we must remember that the burly manufacturer was in his seat in Parliament, and politicians then, as now, were reluctant to injure the interests of the manufacturer. Moreover, we should remember that this was the first and the only humane child labor legislation that had been enacted.

The history of child labor laws is a long one. Child labor is a difficult question to handle. In poverty stricken districts children must earn bread or be given bread, or they must die of starvation. The progress of legislation in the United Kingdom is manifest in the Employment of Children Act of 1903:

1. No child may work before six in the morning or after nine at night.

2. The carrying of heavy weights, and employment in occupations likely to prove injurious to health are prohibited.

3. The age for the prohibition of the employment of children in theatrical performances is raised from seven to ten years.

4. Local authorities (the councils of county boroughs, municipalities of over 10,000 inhabitants, urban districts with over 20,000 inhabitants, elsewhere the county council) are empowered to make by-laws, regulating all occupations of children. Separate regulations for street trading may be enacted.

A brief statement of the child labor situation in various countries previous to 1914 is interesting:

Austria: Age limit twelve years. Hours of labor not to exceed eight. Night work, between 8 P. M. and 5 A. M. forbidden to women and children.

Belgium: Age limit twelve years. Time limit ten to twelve hours. Boys may not spend more than ten hours underground, *i. e.* in mines; nor work between 9 P. M. and 5 A. M. Females under twenty-one may not work underground.

France: Age limit thirteen years. Time limit ten hours, eight underground. Females may not work underground. Children may not labor between 9 P. M. and 5 A. M.

Germany: Age limit thirteen years. Time limit six hours. Night work forbidden. Parents may work their own children ten years of age in their own factories or shops not to exceed three hours per day or during school vacations four hours. Your children may run errands, serve milk, or deliver newspapers so far as these duties are not excessive and do not interfere with attendance at school. No female may work underground. In the coal districts boys fourteen years old may work underground seven hours.

Italy: Age limit twelve years. Time limit eleven hours. No female may work underground or more than twelve hours. The minister of agriculture may issue permits to children to work twelve hours in the planting and the harvest season.

Switzerland: This is the country of the referendum. Age limit fourteen years, the highest in Europe. Time limit for all persons, eleven hours. Persons under sixteen years of age may not tend circular saws, drawbridges, steam boilers, dynamos, or work in dangerous places or with dangerous chemicals, etc. Women and children are forbidden to work after eight at night and on Sundays.

In nearly all cases, attendance at school for a part of the day was compulsory, but the number of children engaged in factories and other indoor breadwinning employments was large enough to render the reader thoughtful.

As a matter of fact, a part of our factory children work for a few weeks only. Large numbers are employed in canning vegetables and fruits. In this way they earn a little ready money for books and clothing and are free to attend school the rest of the year. Nevertheless, the employment of children in American factories and in trade and transportation gained such ground in twenty-six states subsequent to 1900, as to require attention.

In 1916, after years of effort upon the part of the foes of child labor, the Owen-Keating law was enacted. It attempted to prohibit nationally the employment of children in mills, factories, mines, and quarries, by way of the power given to Congress to regulate commerce between the states. It prohibited the transportation from one state to another of the factory product where children under fourteen years were employed, or where children between fourteen and sixteen worked more than eight hours a day or six days a week, or after 7 P. M. or 6 A. M. The Southern Manufacturers Association brought suit to test its constitutionality, and the Supreme Court decided the law was invalid in that it exceeded the right of Congress to regulate trade between states. The majority opinion was based on the principle that the law interferred with the old doctrine of states' rights, in as much as the regulation of the hours of children employed in factories was a matter purely local in character and therefore should be regulated only by local authority which was inherent in the state and had never been surrendered to the general government. The effect of this decision was overcome in part by strict enforcement of the War Labor Policies Board "contract clause" that no contract could be let to anyone who did not follow substantially the code in the defeated law. Where patronage need not depend on the government there was a general return to

old conditions. The number of children leaving school for industry doubled in some states in 1917 and 1918. A nine-, ten-, or eleven-hour day was not unusually exacted. This was especially true in canneries, cotton mills, and farm employment. School laws were disregarded and so general were the deleterious effects upon the youth of the country from lax enforcement of school and labor laws that many states yielded to a campaign of criticism and improveed conditions as to juvenile labor.

The war's effect in Great Britain and other countries was, naturally, farther reaching than in the United States. In Great Britain juvenile delinquency increased 40 per cent. It was declared that 600,000 children were prematurely withdrawn from school. In Austria the conditions alarmed parliament. Great numbers were exploited at very early ages. One-third of the children were out of school; many were doing night work. England, Italy, France, Germany, Austria, and the United States—all considered the child labor problem, enacted some beneficial legislation, and left much more to be desired.

See FACTORY SYSTEM; WAGES.

"For oh," say the children, "we are weary,
And we can not run or leap.
If we cared for any meadows, it were merely
To drop down in them and sleep. . . ."
They look up, with pale and sunken faces,
And their look is dread to see,
For they 'mind you of their angels in high places,
With eyes turned on Deity.
"How long," they say, "how long, O cruel nation,
Will you stand to move the world on a child's heart—
Stifle down with a nailed heel its palpitation,
And tread onward to your throne amid the mart!
Our blood splashes upward, O gold heaper,
And your purple shows your path.
But the child's sob in the silence curses deeper
Than the strong man in his wrath."

—Elizabeth Barrett Browning.

Child, Lydia Maria (1802-1880), an American writer of prose and verse. She was born in Massachusetts and died there. She came into notice through interest in the abolition movement. One of the first anti-slavery books published was her *Appeal for the Class of Americans called Africans.* For several years she and her husband, Mr. Child, edited the *National Anti-Slavery Standard.* She wrote much for children. Among her writings may be mentioned. *The First Settlers of New England, Flowers for Children,* and *Looking Toward Sunset.* One of Mrs. Child's well known poems is *Thanksgiving Day:*

Over the river and through the wood—
Now grandmother's cap I spy.
Hurrah for the fun!
Is the pudding done?
Hurrah for the pumpkin-pie!

Child Study, a phase of scientific investigation taken up chiefly in connection with the training of teachers. Although the early philosophers and teachers commented upon certain traits of the child mind, it was left for the modern educator to do anything really systematic in this field. Rousseau was particularly enthusiastic in his advocacy of the theory that a child should develop in a natural and unhampered way; and this was the inspiration for much of the present development along this line. Froebel, Comenius, and Pestalozzi were especially insistent that anyone who expected to teach the child should study him; while the method of so doing, by observation and experiment, came about in a large measure through the influence of Herbart, who felt that in this field certainly there was no place for introspection and speculation.

The child study movement had its origin in Germany and has there reached its greatest development. Early in the last quarter of the past century attention began to be paid to it in the United States; and within a couple of decades it became an important element in our system of education. Specialists in this field have been developed in the various university departments of education and psychology, and they are employed in other institutions to instruct prospective teachers, or are connected with larger city systems in directing the study of the children by the teacher. State normal schools include the subject in their courses, and the National Educational Association has a special department, for child study. This is also true of most state associations. Thus is seen something of how widespread the movement has become.

In its simplest aspects, child study may

be taken up by any teacher or parent without special training or equipment (though this preparation is desirable). It means simply the observation of the child with a view to discovering how his senses develop, how his physical growth is related to his mental development, what defects he has in sight or hearing, and what are his interests and disposition. This aspect of child study lends itself readily to the home, and every mother, to say nothing of the father, should find pleasure as well as great good in this fascinating study. Much of the lack of understanding between the adult and the young would pass away if but a little effort were made by the parent to know the developing mind. This is particularly valuable at the adolescent period where, without understanding, behavior at this time often seems inexplicable. (See ADOLESCENCE.)

As a result of child study in the preparation of the teacher, the subject matter of education and its order of presentation have become greatly modified. Interest on the part of the pupil is a determining factor both as to the matter and the time when offered. These depend upon each child and must not be arbitrary and dogmatic. The kindergarten and the various phases of manual effort have come in through child study. As a consequence, also, rigid discipline and corporal inflictions have yielded place to self government and the honor systems.

Childe Harold's Pilgrimage, a narrative poem in four cantos, by Lord Byron. The first two cantos were published in 1812, the third in 1816, and the last in 1818. The third canto is the best. The poem is autobiographical in style and describes the impressions and reflections of a misanthropical young man traveling through southern Europe. See BYRON.

"In *Childe Harold* the scenic background to the somber figure of the pilgrim is Europe itself, brought before us with a sympathetic breadth and truth unmatched in the history of the literature."

Children of the Ghetto. See ZANGWILL.

Chile, chē'la, a republic of South America. It lies between the Pacific Ocean and the Andes Mountains. It extends along the coast from Peru to Cape Horn for 2,629 miles, equal to the distance from Maine to California. Punta Arenas in Chilian waters is the most southerly town in the world. The northern end of the country lies in the belt of eastern winds, and the Andes rob these winds of all moisture. This part of Chile is therefore a dusty, rainless region, scorched by a tropic sun. It is a parched, plantless desert, but it abounds in deposits of nitrates of soda and in mines of iron and precious ores. Busy towns with electric lights and street railways are built up on the nitrate industry. The extreme southern region is rainy, cold, rocky, and barren, the home of a few rookeries of seals, penguins, and sea fowl. Between these extremes of torrid and of antarctic barrenness is a large extent of fertile soil with the productions and prosperity of the temperate zone. This region shades off, of course, into the other two. Wheat and other small grains, grapes, small fruits, and orchard fruits are cultivated in profusion. Cattle raising, mining, and lumbering are the leading industries. The population of the country is about 4,000,000; nearly half of the people live in towns. This includes many of those engaged in mining and fishing. Santiago, the chief city and capital, is situated in the uplands, about 2,000 feet above the sea. It is well built, with public buildings and educational facilities, parks, street railways, and electric lights. Valparaiso, half as large, is the seaport. Together they have a population of half a million, between that of Baltimore and San Francisco.

The prevailing religion of the country is Roman Catholic, with tolerance for all sects. Schools are free, but the common people are still illiterate. The official language is Spanish. The foreign commerce amounts to about $35,000,000 in imports, and $90,000,000 of exports. Great Britain gets nearly half the business; Germany nearly a third; and the United States a sixth. The chief exports are nitrate, copper, iodine, wheat, silver, leather, gold, hides, and wool. The merchants of Chile buy cloth, paper, oil, chem-

icals, and machinery abroad. There are 2,800 miles of railway; half belongs to the state. There are 11,000 miles of telegraph lines, largely owned by the state.

Chile is calling for settlers. The Japanese are encouraged to come over, not only as laborers, but as homesteaders. Chilean agents at Tokio (1907) offered forty acres of good land for every immigrant, twenty acres more for each son of 18 years and over, a yoke of oxen, a set of agricultural implements, and a sum of money equivalent to $15 per month the first year of residence. Already a considerable number of Japanese farmers have given up their diminutive holdings in Japan to make new homes on the rich, unoccupied lands of Chile.

Chile was formerly a Spanish province, but threw off the Spanish yoke in 1818. The present government is modeled on that of the United States. The president is chosen for five years and is not eligible for reëlection.

STATISTICS.

Land area, square miles	292,580
Population (1920)	3,754,723
Santiago	332,724
Valparaiso	162,447
Concepcion	55,330
Iquique	40,171
Number of provinces	23
Members of state senate	37
Deputies	118
Salary of president	$6,000
Valuation of property	$675,000,000
Bonded indebtedness	$90,000,000
Domestic Animals—	
Horses	516,000
Mules	83,000
Cattle	2,500,000
Sheep	4,224,000
Pigs	216,000
Goats	343,000
Exports	$90,000,000
Miles of navigable rivers	705
Miles of railway	3,288
Manufacturing establishments	2,829
Capital invested	$46,000,000
Operatives	51,000
Raw material	$34,000,000
Output of manufactured goods	$62,000,000
Saltpeter (1907)	$70,000,000
Tons of coal mined	789,000
Output of copper	$8,000,000
Teachers in public schools	4,520
Pupils enrolled	160,736
Number of postoffices	1,090

Chillon, shĭl′lon, a castle in Switzerland. It was built 1238 by Amadeus IV of Savoy, and was long used as a state prison. The castle is at the eastern end of Lake Leman. It is situated on a rock almost surrounded by water. Chillon is the scene of Byron's *The Prisoner of Chillon:*

> Lake Leman lies by Chillon's walls:
> A thousand feet in depth below
> Its massy waters meet and flow,
> Thus much the fathom line was sent
> From Chillon's snow-white battlement,
> Which round about the wave enthralls.

See GENEVA, LAKE OF.

Chiltern Hundreds, an English stewardship. The hundred is a division of many English counties dating from the time of Alfred. Very possibly it may have been a portion of a county supposed to have 100 fighting men. The term was introduced into our middle colonies and still lingers in Delaware. The Chiltern Hundreds are a hilly game district of Buckinghamshire which has long belonged to the crown. The stewardship of this district is now a nominal position, but being by tradition a position of honor and profit, its holder may not sit in Parliament. As a member of Parliament may not resign, a member wishing to vacate his seat requests an appointment as steward of the Chiltern Hundreds. This appointment releases him from Parliament. The steward may, of course, resign, which leaves the way clear for another appointment. The royal assent is in this way obtained before a member may resign his seat in Parliament. See PARLIAMENT.

Chimborazo, chĭm-bō-rä′zō, a snow-clad peak of Ecuador. It presents a magnificent spectacle from the Pacific, lifting its snowy hood 20,700 feet into midair. It attracted Humboldt's attention in 1802, and he attempted its ascent, but was unfortunate enough to choose the wrong path and was stopped by a chasm 500 feet wide.

Chime, a set of bells, usually five to twelve, tuned in a musical scale. They may be stationary and be struck by hammers played by a performer, or, as is, strictly speaking, the proper way for a chime, they may swing and be struck by a tongue. A bell tower and a chime of bells is a

regular feature of the commercial towns and cities of the Netherlands. There are many fine chimes in France and in England. There is no sweeter sound than the music of a chime of bells floating across the country side. See BELL.

Chimaera, kĭ-mē′ra. See BELLEROPHON.

Chimney, an upright passage designed to carry away smoke and create a draft. It may be built of any non-combustible material, as brick, stone, or concrete. The design of the fireplace chimneys of the early settlers was brought from England. In wooded countries, they were built of short wooden logs, well plastered within with clay. Chimneys of stone masonry were a great improvement. The higher a chimney, the better the draft, as this depends on a difference in weight between the warm air of the chimney and the cold air on the outside. The enormous chimneys in connection with factories are built to a great height to secure draft. A concrete smokestack erected recently at Great Falls, Montana, is 506 feet high. Its diameter at the base is 78 feet; at the top, 55 feet. The dust, or soot, is caught on vertical wires from which it is shaken into hoppers at the bottom and dumped into cars in a pit beneath. This is probably the loftiest chimney in the world. If a chimney be too large to be heated it will not draw well. Masons formerly surrounded large chimneys with trestle work, but now build from the inside. Chimneys of a primitive sort were not unknown to the ancients, but the modern chimney may be regarded as an invention of western Europe.

Chimney Swallow. See SWIFT.

Chimpanzee, a manlike ape of equatorial Africa. Its arms are long; the hind toe acts like a thumb. It is smaller and more active than a gorilla. It usually walks on all fours with its fingers doubled under the palm of the hand, but by grasping its thighs with its hands, also walks erect, the most nearly so of all apes. The skin is yellow and is clothed with shining black hair which hangs at a considerable length about the head and shoulders. The chimpanzee is fitted for climbing. Its natural food consists of fruit and birds' eggs. The female brings forth its young on a rude platform of sticks put together in a lofty tree-top and abandoned as soon as the young is able to accompany its parent. The chimpanzee feeds chiefly at night, and is dreaded by planters, whose banana plantations are likely to be ruined by the nocturnal visits of these destructive animals. It is the most human of all apes. It can be taught in captivity to eat with a knife and fork and to perform many tricks requiring not only powers of imitation, but intelligence and judgment. See GORILLA; ORANG-UTAN; MONKEY.

China. See CHINESE EMPIRE.

China Clay. See KAOLIN.

China Silk, a plain-woven silk manufactured on the hand looms of China, Japan, and India. The same thread is used for both warp and weft, the weaving is done evenly, and the finished product possesses a natural luster. As the spinning is done by hand also, there are imperfections in the thread which produce certain irregularities in the fabric. These irregularities make it possible to distinguish real China silk from imitations produced by machine spinning and weaving. The Japanese silk is superior in smoothness and softness to that from China. In the factories of Japan and China two men working all day will weave three or four yards of silk and receive in payment for their labor about ten cents apiece. The imitation "china silk" produced by machinery in the United States is neither so soft, so lustrous, nor so durable as the hand weave. It does not show uneven threads.

Chinch-Bug, an insect noted for its destructive effects in grain fields. The adults are blackish with white wing covers. Six of these bugs placed end to end would scarcely measure an inch. They spend the winter under cornstalks, straw, or any other rubbish, and lay their first eggs in early spring in grain fields on the roots or lower part of the stalks. The young are hatched in about twelve days. The nymphs, as they are called, are red in color. They are like the parent, save that they are very small and are without wings. They feed on the roots of the grain for a time; then attack

the stalks and blades. In about two months from the laying of the egg the entire generation, numbering millions in a badly infested field, have their growth, and start on the march for new pastures where they at once lay eggs for a second brood. Sometimes their advance may be stayed by a ditch into which they tumble; if holes be dug at ten foot intervals in the bottom of the ditch the bugs will collect in them and be destroyed. Their only natural check seems to be a contagious disease which carries them off in multitudes. The various agricultural experiment stations are making an effort to check this pest by introducing diseased bugs in localities where the chinch-bug is in vigorous condition. It is estimated that the extermination of the chinch-bug would add $100,000,000 to the annual productivity of American farms. Of field crops rye is the grain least subject to this pest. Rice may be saved by flooding. See FLY; INSECTS; BUG; HESSIAN FLY.

Chinchilla, a small rodent reminding one of the field mouse, the chipmunk, and the coney. It is about ten inches in length, with half as much to be added for its tail. It lives in colonies in the Andean region. It is clothed with beautiful, pearly gray fur, greatly in demand for muffs, linings, ladies' capes, and the like. The chinchilla is trapped for its fur by the Indians who sell to the traders in the towns. The high prices prevailing have led to a marked diminution in the numbers of this inoffensive animal. In 1905 1,461,200 chinchilla skins were exported at $29.90 per dozen; in 1908 the number fell to 38,000 skins, though the price had risen to an average of $43.85 per dozen.

Chinchona. See CINCHONA.

Chinese Empire, now the Republic of China, is a vast country of eastern Asia, composed of China proper and four provinces. For an account of the provinces, the reader is referred to the articles on MANCHURIA, MONGOLIA, TURKESTAN, TIBET. The *Statesman's Year Book* for 1917 estimates the area of China proper at 1,532,420 square miles, and the area of the entire empire at 4,277,170 square miles. Estimates of the population cannot be depended upon. The latest official estimate given out by the Chinese themselves in 1911, however, reports the population of China proper at 329,542,000. This estimate gives China proper a population of 214 per square mile.

TOPOGRAPHY. China proper is a compact and fertile country. It has 2,500 miles of seacoast, with numerous good harbors. The best way to carry the geography of China in mind is to regard it as a series of parallel valleys or river plains, running to the Pacific Ocean. The interior of the country about the head waters of these rivers is hilly or mountainous, and is practically unknown to travelers. The lower valleys are broad, alluvial plains, like those of the Mississippi, and are exceedingly fertile. The great cities are situated on these rivers or on harbors near their mouths. At a distance of 100 miles from the coast, the Hoang-Ho and the Yang-tse-Kiang are connected by the Grand Canal, 1,000 miles in length—the greatest canal system in the world. The soil of China is, for the most part, a rich red or yellow clay. In the north central part there are vast areas covered to a great depth with a peculiar, fertile soil called loess. It is believed to have been formed by a gradual accumulation of dust, carried by winds from the elevated table lands of central Asia. The Chinese are exceedingly industrious. When a hillside is too steep for cultivation, they form a series of broad steps or terraces, so that no part of the country may be useless.

MINERALS. China is rich in minerals, especially in coal. The most extensive coalbed known lies in the great bend of the Hoang-Ho. Gold, silver, and copper are found in limited quantities. There is an abundance of mercury and iron. Little is known of the lead, tin, and zinc which are believed to exist. Inexhaustible beds of kaolin, or porcelain earth, have given the country its reputation for chinaware.

FLORA AND FAUNA. The country is so large that it is difficult to characterize the plants and animals in a general description. There are said to be over 700 different birds and about 200 mammals. Tigers and leopards are still found on the

1. Woman's shoe for normal foot. CHINESE ART. 2. Shoe for bound foot.
3 & 4. Opium pipes. 5. Head-dress of empress.
6 & 7. Heads of pikes. 8. Battle ax. 9. Two sabres in one scabbard. 10. Swordstick.
11 & 12. Ornaments. 13. Girdle clasp of wife of mandarin. 14. Porcelain vase. 15. Fan.
16. Tea service. 17. Black lacquered vase inlaid with mother-of-pearl. 18. Old tea-canister, carved soapstone panels. 19. Written characters, new style. 20. Tin-tso coral ornament from the hat of a mandarin's wife. 21. Ornamental pin. 22. Ear pendant of glass and coral, with tassel of silk. 23. Carved bamboo sup. 24. Pendant of necklace. 25. Pin, gold and enamel. 26. Gold ornamental pin. 27. Engraved wooden comb. 28. Ladies' handbag. 29. Embroidery. 30. Textile fabric.

Manchurian border. The bear, the lynx, the badger, the marten, and the weasel, as well as the elephant, rhinoceros, and the tapir, are still found in certain localities. Chinese pheasants have been imported into this country. The native home of the peacock is here. Eagles, hawks, and owls are found. The rivers teem with wild ducks and geese, swans and pelicans. The handsome mandarin duck is a native of China. The cormorant has been trained by the natives to capture fish. A ring is put around its neck so that it cannot swallow. It dives from the prow of the keeper's boat, pursues the fish with incredible rapidity, and brings them up in the pouch under its lower mandible. The catch of fish in the rivers and canals is large. The fish spawn in the rice fields when flooded. Our goldfish are from China. A mere list of trees and shrubs native to the country would occupy pages. A large number of our ornamental shrubs and varieties of fruit-bearing trees are from China. Of shrubs having special value, the most notable are the tea plant and the mulberry tree, on the leaves of which the silkworm feeds. The pine, yew, and cypress, various oaks and the chestnut, and several palms are found in different parts of the empire. The plant most used for building purposes, however, is the bamboo, to the article on which the reader is referred. The Chinese are famous fruit raisers, gardeners, florists. Some of our garden plants were developed first in China. Of fruits, the orange, peach, pomegranate, quince, plum, and apricot flourish. The camphor tree is a native. We are indebted to China for many varieties of azaleas, camelias, hydrangeas, asters, lilies, and roses.

Agriculture. Agriculture is the leading industry. Rice is the principal crop. It is of two kinds—an upland rice, cultivated after the manner of wheat, and a lowland rice, requiring irrigation. Two crops of the latter are raised yearly in the river plains of the south. The Chinese are exceedingly industrious and utilize every inch of land, going to the extent of setting out rice plants by hand. Their implements, however, are rude, and they object strenuously to any change either in methods or tools. The sickle, the threshing floor, and the winnow are still in use. Sugar-cane, indigo, the castor oil plant, wheat, barley, peas, beans, all sorts of vegetables, Indian corn, buckwheat, and tobacco are raised in suitable districts. Chinese cotton is of immense importance to the inhabitants, but is of rather inferior quality. Chinese silk, on the contrary, has greater firmness and strength, as well as a more beautiful luster than that of any other country.

The great curse of China has been opium, and the poison affected not only the lowest, but the highest classes of society. Ever since the unrighteous Opium War, the growing of poppies had been increasing, but at the close of the Russo-Japanese War the government realized that the opium habit must be checked or China would be helpless to protect herself. In 1906 the government issued stringent regulations so that by the reduction of poppy growing at the rate of one-tenth a year, the use of opium should cease altogether in ten years. In 1907 they made an agreement with the British government whereby Great Britain agreed to reduce her importation from India into China at the same rate. From the time of the decree no one was allowed to begin the use of the drug; all opium users, opium dens, shops, and the amount of their sales, were listed. All government officials, teachers and sailors were ordered to give up the drug, and those who disobeyed were banished. These stringent measures are having a pronounced effect, and already missionaries and others report whole districts formerly given over to the poppy now being under cultivation of rice and other cereals, while the effect upon the people themselves is even more marked.

Industries. At some time in their history the Chinese must have been inventive. They are credited with gunpowder, the mariner's compass, printing from wooden blocks, looms, waterworks of bamboo cane, the construction of canals, artesian wells, as well as many other enterprises requiring inventive ability. At the present time, however, the Chinese workman is not intelligent. It appears to be a part of the national religion to do as has been done

No matter how laborious or clumsy a method may be, it never occurs to the Chinese workman or laborer that there might be an easier or a quicker way. Instead of gaining credit, workmen who were to propose a better method would be attacked as irreligious.

Language. In race and speech the Chinese are related to the inhabitants of Tibet, Mongolia, Manchuria, and Japan. They are supposed to have entered the country from central or western Asia. A few remnants of a preceding people still persist in certain mountainous districts, just as the Celts have persisted in the Highlands, in Wales, Cornwall, and Brittany. The Chinese language consists of words of but one syllable. Words seemingly of more than one syllable, as Pekin and Canton, are compound or agglutinated words like our stovepipe, sheepfold, and the like. In writing, a separate character is used for each of these monosyllabic words. The character has the same meaning in all parts of China and in Japan. It may, however, be pronounced differently, just as our figure 4 has the same meaning in all parts of the civilized world, but goes by many different names. It is necessary for a Chinese boy to learn the meanings of about 50,000 characters. They are arranged in vertical columns instead of in lines running crosswise of the page and are read up instead of down. Chinese writings are perhaps the most ancient in existence. If we except the Scriptures of the Hebrews, Chinese literature may be considered the most extensive and important produced in Asia. All officeholders must be highly educated.

Religion. The prevailing religion of the people is Taoism, a sort of ancestor worship. Many profess a form of Buddhism. The state religion is a system of ethics taught by Confucius, who lived about 550 B. C. Reverence for things as they are, obedience to parents, and ancestor worship are carried to an extreme. More attention is bestowed on the dead than on the living. The family graves are protected with so much veneration and take up so much space as to interfere seriously with the agricultural productivity of the country. One of the chief difficulties to be experienced in the building of railways is the frenzied opposition of the inhabitants to the excavating of railway cuts that disturb their private burial grounds, which it is impossible for the most skillful engineer to avoid. In 1905, aside from Russian lines, China had but one mile of railway for each million of people.

Habits and Customs. Owing, possibly, to the prevalence of earthquake shocks, dwelling houses are of one story. They are without windows. The material varies greatly in different parts of the country. It may be brick, straw, thatch, bamboo, or woodwork filled in with plaster. Adobe huts predominate. There are 4,000 walled towns. The houses of the wealthy consist of numerous chambers constructed frequently around an inside open court. In these houses, the floors are covered with matting and are kept scrupulously clean. Rich and well-to-do women dress attractively. To distinguish them from the peasantry, who walk and work, the feet of ladies were formerly bandaged from infancy, so as to prevent their growing. They hobbled about in delicate little high heeled slippers about large enough for a child three years old. With the awakening of China, however, this practice has been abandoned. Likewise by imperial edict in 1910 all Chinamen who desired to, were permitted to cut off their queues.

History. The connected history of China really dates from the conquest by the Manchus in 1644. They have furnished the most intellectual line of rulers that China has had, and in the early period of China's relations with the western world they were favorably disposed toward the European traders. In the reign of Emperor Tao-Kwang (1821-51), they began to realize that they were exporting their choicest products, silks, tea, silver, etc., and receiving nothing in return but the harmful opium. The emperor accordingly tried to suppress the nefarious trade, but only succeeded in precipitating the Opium War (1840-42), with England, whereby the ports of Canton, Shanghai, Ning-po, Tu-Chow and Amoy were thrown open, and Hong Kong was ceded to Great

Britain. This increase of rights to foreigners led to subsequent uprisings and revolts which threatened to destroy the empire itself had it not been for the assistance rendered by "Chinese" Gordon. The next decades marked attempted encroachments by France, Russia, and Japan. Finally in 1894 China and Japan became involved in a war over Korea, in which China was defeated, and by the Treaty of Chefoo, 1895, she was obliged to cede Formosa and certain parts of the Liaotung peninsula to Japan. New treaty ports were also opened to the world trade. China now set to work to reorganize her army, but the other nations were clamoring for territory, which they received. Russia obtained a twenty-five year lease of Port Arthur and adjoining territory; England, to counterbalance this, secured the port of Wei-hai-wei across the straits from Port Arthur. France secured a long lease of the coast of the Bay of Kwang-chan-wan. These various concessions aroused the anti-foreign element in China and led to the Boxer uprising of 1900. The armies of the United States, France, Great Britain, Russia and Japan, marched upon Pekin to protect their legations. With the restoration of peace, all the foreign troops were withdrawn save those of Russia which remained in Manchuria for the alleged purpose of guarding the railway, until forced out by the Russo-Japanese War. In 1906, the government took measures to abolish the opium trade, and in 1907, the first definite steps were taken toward establishing a constitutional monarchy. The Emperor Kwang-Hsu died in 1908, and his death was immediately followed by that of the dowager empress. The last emperor was Pu-Yi, born in 1906, the government being under the regency of his father, Prince Chun.

GOVERNMENT. Down to 1906, China was an example of the most complete absolutism. In 1907 steps were taken leading toward parliamentary government, and in 1908 an imperial decree authorized the establishment of provincial assemblies, for which elections were held the following year. Meanwhile, a plan for a national assembly had been approved which, however, had advisory powers only.

The Chinese uprising against the Manchu government began in the latter part of 1911. The rebels captured many cities, and province after province seceded until, by the close of the year, fourteen out of twenty-two had thrown off their allegiance, though the dynasty sought to preserve itself by granting every demand of the people. A new constitution was sanctioned by edict November 3, and on November 6 the regent abdicated. On December 14 the Nanking assembly, representing 14 provinces, elected Dr. Sun Yat Sen president of the Republic of China. On February 15, 1912, the emperor abdicated the throne, and on the same day Dr. Sun Yat Sen resigned, and Yuan Shih Kai was elected president and was inaugurated at Peking, March 10. A cabinet was speedily formed with Tang Shao Yi as Premier. The Legislature consists of an upper house of 274 members elected by the provincial assemblies and a lower house of 596 elected by a restricted manhood suffrage. The Republic has adopted a new flag on which the old dragon has been replaced by five stripes—crimson, yellow, white, blue, and black—to represent the five classes of people—Mongol, Chinese, Manchu, Mohammedan, and Tibetan.

In June, 1916, Yuan Shi Kai died and Li Yuan Hung became president. The president is elected for a term of five years. He possesses autocratic powers and China is a republic in name only.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area (China proper)	1,532,420
Number of provinces	22
Population (est. 1917)	439,214,000
Pekin	693,044
Singan	600,000
Tientsin	800,000
Hankau	820,000
Nanking	267,000
Shanghai	651,000
Hangchau	350,000
Fuchau	624,000
Canton	1,250,000
Cotton, pounds	250,000,000
Coal, tons	9,000,000
Salt, tons	178,000
Tea, pounds exported	199,700,000
Iron ore, tons exported	87,701
Total exports	$211,000,000
Miles of railway	3,000

Number of postoffices	9,000
Newspapers	200

Chinese Gordon. See GORDON, CHARLES GEORGE.

Chinese Literature. See LITERATURE.

Chinese Wall. See GREAT WALL OF CHINA.

Chinook, the name of an Indian tribe which formerly lived near the mouth of the Columbia River. The term has been transferred to a warm, southwest wind which blew from the Chinook country to the region occupied by the Hudson Bay Fur Company at Astoria, Oregon. In Washington and Oregon a chinook is a southwest coast wind laden with the warmth and moisture of the Pacific Ocean. East of the Cascades and east of the Rocky Mountains a chinook is a warm, dry, westerly or northerly wind, coming down the east slopes of the mountains. It is dry because it has precipitated its moisture on the mountain tops, and it is warm because the air is crowded together, or condensed, in descending the mountain slopes. The warmth is due to the operation of a physical law, that compression, or shrinkage of bulk, warms any substance. A chinook is likely to set in at any hour of the day, and to continue from a few hours to several days. A continued chinook flows out several hundred miles from the mountain range. The chinooks modify the winters of eastern Oregon and Washington and of Montana, Idaho, and Wyoming, the western parts of the Dakotas, and the northwestern provinces of British America. Occasionally a chinook, known as a winter thaw, reaches the Mississippi Valley, and something of the sort is noticeable on the eastern slopes of the Alleghenies. Similar winds are known in Switzerland. The chinooks are of great value to stockmen, who depend on standing grass for their cattle during the winter. Oftentimes a heavy fall of snow, followed by cold weather, renders it impossible for the cattle to get at the dried grass. When a warm, dry wind comes speeding down from the distant mountains, the snow and ice disappear in a marvelously short time, and the cattle are out on the plains and hillsides, feeding abundantly, all danger of starvation happily averted.

The cattle seem to anticipate the coming of a chinook. In times of cold and hunger they may be seen standing knee-deep in the snow with their heads turned toward the mountains, anxiously awaiting the arrival of relief. Near the mountains a chinook may be a heavy gale, but farther out on the plains, it subsides into gentle, light, delightfully warm puffs. The following graphic account shows the effect of a severe snowstorm on grazing cattle in Montana:

> The effect on grazing cattle in Montana was especially severe. Thousands of the helpless beasts wandered aimlessly over the hills searching in vain for food and shelter. As the days went by and no relief was afforded, their safety was a question of great moment. No food was obtainable, for the grasses upon which they were wont to subsist lay buried under thirty inches of snow. On the evening of December 1, 1896, the temperature at Kipp, Montana, was —13° F. The air was scarcely moving and the sky was clear. Suddenly over the edge of the mountains in the southwest appeared a great bank of black clouds, their outer edges blown into tatters by the wind. In a few minutes a short puff of hot, dry air had reached the plains and in the following seven minutes the temperature had risen to 34° F. The wind increased in velocity to twenty-five miles an hour and the temperature rose to 38° F. Within twelve hours every vestige of the thirty inches of snow had disappeared, leaving the hills bare and the plains covered with water.

A rise of 20° F. in ten minutes is not unusual.

Chinquapin, chĭn′kà-pĭn, an Indian name for the dwarf chestnut of the United States. This shrub ranges from Pennsylvania to Texas. The name is applied also to a shrub oak of the Sierra Nevada Mountains.

Chintz, chĭnts, the name under which printed cottons were imported originally from India. The word is from the Hindustanic *chhint,* meaning spotted. The hand-woven, hand-printed chintz made in India is a coarse fabric of uneven threads. It is printed in old-fashioned designs and is finished without starch or dressing. The name is used at the present time among manufacturers for a species of glazed calico used for furniture covering and draperies.

Chipmunk, a small striped American squirrel, half way between the true, or tree squirrel, and the gopher, or ground squirrel. Its Latin name signifies a steward, and is expressive of its characteristic habit of storing away hoards of nuts, grains, and seeds, for use in time of scarcity. The chipmunk frisks in and out about stone walls, log piles, and stumps. It excavates long burrows beneath the frost line. Convenient chambers, or enlargements, are arranged at intervals in which it stores its supplies. A living room is furnished with a comfortable bed of leaves. Like its relatives, it has capacious cheek pouches in which it carries nuts, seeds, buds, and grain to its storerooms. The storage instinct seems to have no limit. If a grainfield, or bin of grain, or a corn crib be at hand, it is said that a pair of chipmunks will secrete a bushel of food, carrying, in fact, until the season drives them under ground to sleep until spring comes. His store of food is intended, it would seem, for springtime scarcity. The body of the Eastern species is about six inches long, with a slender tail nearly as long as the body. Its back carries five black stripes and two white ones. The Rocky Mountain species has the same number of dark stripes and four white ones.

The chipmunk, on the shingly shagbark's bough,
Now saws, now lists with downward eye and ear,
Then drops his nut, and, cheeping, with a bound,
Whisks to his winding fastness underground.
—Lowell, *An Indian Summer Reverie.*

Chippewas, a tribe of American Indians allied to the Delawares, Shawnees, and Blackfeet. They occupied a large territory surrounding Lake Superior. Numerous small bands are still found in this region. Nominally they live on reservations, but they are to be seen paddling up and down the rivers and lakes almost anywhere. They are preëminently children of the forest. They are skillful in the construction and use of birch bark canoes, and are great hunters, trappers, and fishers. Enmity existed between them and the Sioux for generations. The border line between the two tribes in Minnesota, as elsewhere, appears to have been the edge of the evergreen belt. Each made murderous forays into the territory of the other. The traveler by rail in the wooded region of Wisconsin and Minnesota not infrequently catches a glimpse of an Indian lodge on the shore of a river or lake. A canoe is likely to be moored near by. Old clothes hang on the bushes. Dogs and papooses are in evidence. If the lodge be low and rounded, it is that of a Chippewa; if conical and pointed, it is that of a Sioux. Longfellow's *Hiawatha* is the hero of the Chippewa or Ojibway nation. Chippewa is a favorite geographical name in the upper peninsula of Michigan, in Wisconsin, and in Minnesota. See INDIAN.

Chiron, kī′rŏn, in Greek mythology, a learned centaur. The Greeks were fond of horses. Other mythological monsters were wholly devoid of good traits, but the centaur, half horse and half man, while savage at times, is represented often as wise and, to a greater or less extent, the friend of man. Chiron was instructed by Apollo and Diana, and became skilled, especially in medicine, music, hunting, and the art of prophecy. Many renowned Grecian heroes were his pupils. He instructed Achilles, Hercules, Ulysses, Aeneas, and others. While chasing the boar Erymantheus, the capture of which was one of the twelve labors assigned him by Eurystheus, Hercules had a fight with the centaurs, drove them from Mount Pelion, and pursued them into the abode of Chiron. Here an arrow from his bow accidentally wounded his old teacher, and Chiron suffered tortures from its poison. In pity the gods put an end to his mortal life, but he was placed among the stars as the constellation Sagittarius or The Archer. See HERCULES.

Chivalry, shĭv′al-ry, a medieval system of military service. The term is akin to chevalier and cavalry, meaning fundamentally a horseman. Chivalry consisted essentially of the order of knighthood to which ordinarily no one could gain admission unless of good blood and fit character and training. He must then be admitted by a knight in regular standing. Customarily a boy of good family was sent

to live in the family of some nobleman at the age of twelve. At first he was a page, and was required to wait on the ladies; then he became a squire and waited on a knight. He practiced in the tilt yard, learning the use of armor and the sword, the management of a horse, and the handling of a lance. It was his duty as a squire to follow his knight to battle, carrying his shield. At the proper age, especially if distinguished by some act in battle, he was knighted, or admitted to the order. This was a religious ceremony, including fasting, receiving the sacrament, and taking upon himself solemn vows to honor and defend women, to protect orphans, to tell the truth, to refrain from slander, and to be loyal to his king and to the church. At the close of the ceremony, he knelt a squire, received a blow on the side of the neck or on the shoulder from the flat of a sword, and rose a knight. Not infrequently, a king might confer the honor of knighthood on the field of battle as a reward for bravery.

Sir Walter Scott was a great admirer of chivalry. His hall at Abbotsford was hung with armor and mementos of this age. His tales are full of descriptions of knightly encounters and of the customs of chivalry. Although he paints in bright colors, his writings may be regarded as a trustworthy reflection of the best side of chivalry.

Spenser's *Faerie Queene* dwells upon the same tales of knightly adventure and courtesy. The knight's armor rendered him a power for good or evil among common men. If he lived up to his vows he was a helper of the needy, a friend of the oppressed. Too often, however, knighthood served as a protection in the commission of the vilest acts. Says the historian Freeman,—"Chivalry was above all else a class spirit."

See ARMOR; CERVANTES; SPENSER; FEUDALISM; CASTLE.

Chloral, a compound of chlorine with oxygen, hydrogen, and carbon. The chloral of the druggist and physician is a compound of choral and water, and is termed hydrate of choral by the chemist. In this form it is a white, crystalline substance having an acrid taste and a pungent odor. In medicine, a dose of from five to twenty grains is sometimes given to produce sleep. It is thought that choral, introduced into the system, is acted upon by the alkali of the blood in such a manner as to liberate chloroform, which acts directly on the nerves of the brain. An overdose of chloral overdoes the quieting process and paralyzes the brain, the heart, and the lungs, and brings on death. Chloral is a standard remedy for insomnia, but it should on no account be taken, except under the advice of a competent physician.

Chlorine, klō′rĭn, an elementary substance. It never occurs free, but always in combination with other substances, very often with sodium. It is a poisonous, greenish gas about thirty-five and one-half times as heavy as hydrogen and two and one-half times as heavy as air. It has an offensive odor and irritates the nostrils when breathed. It may be liquefied by cold and pressure. Chlorine has a strong affinity for hydrogen, and, for that reason, is much employed in bleaching cotton and linen. It decomposes moisture by uniting with the hydrogen, leaving the oxygen free to neutralize the coloring material. This gas is destructive to animal and vegetable life because it absorbs the hydrogen of the water living things contain. Chlorine unites with metals and other substances to form a large class of compounds known as chlorides. Chloride of lime makes an excellent deodorizer or disinfectant, as it not only neutralizes offensive smells but kills bacterial germs. Chlorine enters into the composition of common salt from which it may be obtained. See BLEACHING.

Chloroform, a heavy, transparent, colorless liquid composed of carbon, hydrogen, and chlorine. It is prepared by distilling a mixture of water, alcohol, and bleaching powder, or chloride of lime. Chloroform must be kept in the dark or it will decompose; it must be corked tightly or it will evaporate. It is used in the arts to dissolve rubber, resins, and fats. In medicine, it is administered in minute quantities. Its effects are akin to those of alcohol, but are more energetic.

In surgery, chloroform is used to produce unconsciousness during a painful operation. It was first used for this purpose by a Dr. Simpson of Edinburgh, 1848. It is administered by presenting a saturated sponge to the patient's nose. The vapor spreads through the lungs and blood to all parts of the body. In a few moments the patient passes through all stages of alcoholic excitement into a helpless, we may say drunken, sleep, during which he is unconscious of pain. The most painful operations may be performed without his knowledge—operations that otherwise could not be performed. Chloroform is an essential part of the army surgeon's outfit, and does much to save the lives of men wounded in battle. It should be administered only by an assistant of experience, as an overdose produces death. With proper precautions, however, its use is not dangerous. Only one person out of three or four thousand fails to come out from under the influence of chloroform. Ether is preferred by many surgeons.

Keepers of dangerous wild animals, as lions or tigers, put them under the influence of chloroform when it is necessary to handle them, to dress wounds, or to transfer them from one cage to another. It may be administered by fastening a saturated sponge to the end of a pole and pushing it into the cage under the animal's nose.

See ETHER; SURGERY; ANAESTHETIC.

Chlorophyll, klō′rō-fĭl, the green coloring matter of plants. The term is Greek and means leaf green. Chlorophyll is a granular pigment contained in the living cells, especially the young cells, of plants. Sunlight is required to bring out its color. Plants kept in darkness for a time become white and waxy. The grains of coloring matter accumulate usually in the upper cells of a leaf, giving that surface a greener color than the under parts. The reds and other brilliant colors of autumn foliage are due to the combination of various minerals with the green pigment of chlorophyll. Hardened tissues and autumn frosts facilitate the operation. Chlorophyll is an important agent in the digestion of plant foods, its function being to combine into starch the carbon dioxide absorbed from the air through the pores with the water taken up by the roots. Free oxygen is given off, thus serving as a purifier of the air.

Choate, Joseph Hodges (1832-1917), an American lawyer and diplomatist who was born at Salem, Massachusetts. He was a nephew of Rufus Choate. His education was received at Harvard University and Law School. He settled in New York where he acquired reputation rapidly as an orator and pleader at the bar. He was one of the Committee of Seventy which broke up the corrupt Tweed ring in the city government of New York; conducted the income tax cases before the Supreme Court, and represented the United States in the Bering Sea Controversy. Under President McKinley, Mr. Choate was appointed Ambassador to Great Britain, in which capacity he served until 1905, when he again took up the practice of law in New York.

Choate Rufus (1799-1859), an American lawyer, orator, and statesman. He was born at Essex, Massachusetts, October 1, 1799, and died at Halifax, Nova Scotia, July 13, 1859. He was graduated at Dartmouth in 1819. He took up the practice of law at Danvers, but removed to Salem in 1828. He was elected to Congress in 1830 and again in 1832. He resigned in 1834 to enter an office in Boston. He succeeded Daniel Webster in the United States Senate in 1841, and served the unexpired term. Mr. Choate was a brilliant public speaker. After Mr. Webster's death he was considered the orator of the state and the leader of the Massachusetts bar. His style was florid, his sentences long and involved. Webster himself once said, "When I was a young man, and first entered the law, my style of oratory was as round and florid as Choate's. I do not think it the best. It is not according to my taste." Mr. Choate's style may be inferred from the following passage from his *Eulogy on Webster:*

> But there were fields of oratory on which, under the influence of more uncommon springs of inspiration, he exemplified an eloquence in which I do not know that he has a superior among men. Addressing masses by tens of

thousands in the open air, on the urgent political questions of the day, or designated to lead the meditations of an hour devoted to the remembrance of some national era, or of some incident marking the progress of the nation and lifting him up to a view of what is and what is past, and some indistinct revelation of the glory that lies in the future, or of some great historical name, just borne by the nation to his tomb—we have learned that then and there, at the base of Bunker Hill, before the corner stone was laid, and again when from the finished column the centuries looked on him; in Faneuil Hall, mourning for those with whose spoken or written eloquence of freedom its arches had so often resounded; on the rock of Plymouth; before the capitol, of which there shall not be one stone left on another, before his memory shall have ceased to live—in such scenes, unfettered by the laws of forensic or parliamentary debate; multitudes uncounted lifting up their eyes to him; some great historical scenes of America around; all symbols of her glory and art and power and fortune there; voices of the past not unheard; shapes beckoning from the future, not unseen—sometimes that mighty intellect, borne upwards to a height and kindled to an illumination which we shall see no more, wrought out, as it were, in an instant, a picture of vision, warning, prediction; the progress of the nation; the contrasts of its eras; the heroic deaths; the motives to patriotism; the maxims and arts imperial by which the glory has been gathered and may be heightened—wrote out, in an instant, a picture to fade only when all record of our mind shall die.

Chocolate. See Cocoa.

Choctaws, a tribe of Mobilian Indians related to the Seminoles, Chickasaws, etc. In 1540, when De Soto marched westward, they occupied a large extent of territory between their eastern neighbors, the Creeks, and the Mississippi River. They are said to have had forty towns and to have numbered 2,500 warriors. They opposed his progress at Choctaw Bluff, Alabama. In the battle that followed twenty of De Soto's men were killed, and two hundred wounded. The Choctaws were a corn-raising, peaceful people. They gave the settlers far less trouble than the warlike Creeks and the Chickasaws. Nevertheless they were forced to migrate. Between 1785 and 1837 they gave up 30,000 square miles of land in exchange for $2,225,000 in money and goods, and moved to Indian Territory. There they became landholders. They established schools, governed themselves by a legislature, loafed, hunted, farmed, raised stock, and became quite civilized. They still number 10,321—rather more than when the white man first found them. A few hundred still linger along the streams of the Mississippi. See Indians.

Choir, kwīr, a body of singers organized to render music in church services. Not infrequently the term is applied to those who lead congregational singing. A choir consists of at least four voices—soprano, alto, tenor, bass. In cathedral services the choir is divided usually into two sets of voices for responsive singing, one sitting on the north, the other on the south of the chancel. For a discussion of the term used in an architectural sense, the reader is referred to the article on Cathedral.

Choke-Damp, the name given by miners to the suffocating gas formed by the explosion of fire-damp. Also called black-damp and after-damp. Roughly speaking, fire-damp is a gas of carbon and hydrogen likely to explode in air. Choke-damp is a compound of carbon and oxygen not poisonous but incapable of supporting life. See Davy; Carbon Dioxide.

Cholera, kŏl'er-à, an acute, infectious disease—not infrequently an epidemic. Like typhoid, malaria, and the bubonic plague, it is thought to be due to colonies of a bacillus. Though the germ theory has not been as yet accepted by all authorities, it is settled fairly well that cholera is due to a spiral bacterium. Cholera is an Eastern infection known in the East Indies at the dawn of history, but it did not spread to Europe and America until 1830 and later. It is often called Asiatic cholera. It has a peculiar way of making long leaps, leaving intermediate districts unmolested. The first symptom of cholera is vomiting, followed by griping pains in the stomach. The disease is very fatal. A large proportion of those attacked die within an hour or two. Opium, quinine, whiskey, camphor, and chloroform are some of the common remedies. Cleanly conditions, high, pure air, and simple food are preventives. It is one of the diseases which medical science has not mastered. The introduction of germs is guarded against by rigid quarantine in seaboard cities. See Disease.

Choosers of the Slain, or **Valkyrior,** văl-kĭr′ĭ-or. See ODIN.

Chopsticks, utensils used by the Chinese to convey food to the mouth. The chopsticks, two in number, are sticks of wood, bamboo or ivory about twelve inches in length and one-fourth inch in diameter. Both are held in one hand and are used with wonderful skill and ease. Americans who have lived in China and become accustomed to the use of chopsticks, consider them oftentimes of greater convenience than the fork. It must be remembered that, as Chinese food is served, a knife is unnecessary.

Chopin, shō-păn′, **Frederic** (1809-1849), a noted Polish pianist. A native of Warsaw. His later years were spent in Paris. He was a brilliant player and the composer of a large number of instrumental pieces for the piano. A list of about eighty of his compositions, including a famous funeral march and many polonaises or Polish dance tunes, is well known to pianists. The peasant music of Poland proved a rich field for Chopin to whom the musical world is as truly indebted for finding, arranging, and recording Polish dancing music as the literary world is to the compiler of the traditions of Robin Hood or of the Knights of King Arthur's Round Table.

Chorus, originally a dance in a ring, or a dance within an enclosure. The word came to be applied to a band of dancers. Then, probably because the dance was accompanied with song, to a band of singers. The chorus of the Greek drama was a band of performers, represented as of age, sex, and condition appropriate to the play, who appeared as spectators of the entire action. The chorus occupied, in the theater, the position between the stage and the auditorium. Through the coryphaeus, or leader, the chorus took part in the dialogue with the actors. When no actor was on the stage, the chorus sang such sentiments as would seem to have been suggested by the events presented, or supplied necessary information that could not be given in the regular speeches. As the members of the chorus sang they danced, or moved about the altar of Bacchus. The chorus was considered indispensable. At one time as many as fifty persons were included in the Greek chorus. Later the number was limited to fifteen for tragedy, twenty-four for comedy.

Chouan, shōō′an, a French word meaning screech owl. The term was applied as a nickname to the peasant leader of an insurrection in Brittany in 1792. His followers were subsequently called the Chouans. They rose partly by reason of poverty and partly out of loyalty to the royal family and to the church. They gave the young French republic much trouble by adopting guerilla tactics. They were not put down till 1800, nor wholly, in fact, till the restoration of the Bourbons in 1815 gratified their wishes. The uprising of the Chouans in favor of the Bourbon family has points of resemblance to that of the Highlanders for the Stuarts. The two peoples are of the same blood. The leading accounts in fiction are Balzac's best novel, *The Chouans,* and Victor Hugo's novel, *Ninety Three.* See CELTS; BRITTANY.

Chremhild, krēm′hĭlt, heroine of the Nibelungenlied. See NIBELUNGENLIED.

Christ. See JESUS CHRIST.

Christabel. See COLERIDGE.

Christ's Hospital, a celebrated charity school in Newgate Street, London. The word hospital formerly meant an institution for furnishing hospitality to, or caring for, the needy. Hence the name was given frequently to charity schools. The school was founded in 1653 by Edward VI for orphan children. At some times as many as a thousand boys and girls have been in attendance, receiving board, clothes, and instruction. The boys wear a very noticeable uniform—a long blue woolen coat, with clergyman's bands at the neck, a red leather belt, yellow silk stockings, low shoes, and no hats. From this costume, they have been called Bluecoat boys and the school is commonly known as the Bluecoat School. Many noted Englishmen received their early education at Christ's Hospital—Coleridge, Lamb, and Leigh Hunt among them. In the days of Coleridge and Lamb, the life was a hard one. The food was poor and scanty, the work wearisome, hol-

idays few, and floggings many and severe. In the *Essays of Elia* Lamb has written an account of this school and his friendships there, under the title, *Christ's Hospital Five and Thirty Years Ago.* Christ's Hospital has been for some years under a new and much improved scheme of management. The result has been a great gain in its standing and influence.

Christian IX (1818-1906), king of Denmark. Although not in the regular order of succession, Christian came to the throne of Denmark in 1863, succeeding Frederick VII. The early part of his reign was unfortunate in many respects. Although Schleswig had been guaranteed its own government under the personal rule of the Danish king, he incorporated it with Denmark. The people rose in revolt supported by those of Holstein. Bismarck seizing the opportunity, went to the assistance of the duchies and the result was their annexation to Prussia. The loss of Schleswig-Holstein antagonized the Danes against their king and this antagonism aroused Christian's distrust of all popular government, a feeling that characterized his entire administration. As far as he constitutionally could he ruled always for the people, never with them. In spite of his ultra-conservatism he was popular with his subjects, but it was because they believed in his personal sincerity while opposing his political ideas. No other ruler of modern times has had as many important family connections with the ruling houses of Europe. One daughter is empress dowager of Russia, the widow of Alexander III; Alexandra of England, wife of Edward VII, is another daughter; his son Wilhelm was elected king of the Hellenes in 1863, under the title of George I; his grandson Karl, son of the present king of Denmark, was elected king of Norway in 1905, under the title Haakon VII; and a granddaughter, Princess Maud of England, is married to Haakon; besides these there are a number of less important connections. In view of these things, it is small wonder that for years preceding his death, Christian IX was popularly known as the "Father-in-Law of all Europe."

Christian Endeavor, or more fully, the Young People's Society of Christian Endeavor. It was organized February 2, 1881, at the Williston Congregational Church, Portland, Maine, the pastor, Rev. Francis E. Clark, being the originator of the movement. Members sign a pledge, binding themselves to loyalty to Christ and the Church, to the daily reading of the Bible, and to the attendance upon the meetings of the society and church to which they belong. The actual work is systematized under various committees. Dr. Clark, called affectionately "Father Endeavor Clark," is chairman of a corporation known as the United Society of Christian Endeavor. District, state and national conventions are of frequent occurrence. The society has spread so widely that its constitution is now printed in thirty-two different languages. It is inter-denominational; Presbyterians, Baptists, Methodists, Congregationalists and many other denominations contribute to its membership, although similar organizations with different names have been established in various churches. There are now about 57,000 Christian Endeavor Societies with an aggregate membership not far from 4,000,000. The national conventions bring together an enormous number of delegates. See BAPTIST YOUNG PEOPLE'S UNION; EPWORTH LEAGUE.

Christian Science, a system of theology and therapeutics developed by Mrs. Mary Baker Eddy. Mrs. Eddy states that she discovered the principle of Christian Science in 1866, through the study of the Bible, which book the denomination accepts as the inspired Word of God. It is difficult to state the creed or doctrines of Christian Science in a few words. Its fundamental principle is God—that is, an understanding of the true nature of God. Christian Scientists deny the existence of matter as a reality. All material things are but manifestations of the mortal mind of man. The only true Mind is God, of whom man is the spiritual image and likeness. Disease, sin, poverty, in fact all evils are errors, having no more reality than have the terrifying images we see in dreams. It is believed that the cures wrought by Jesus

Christ, were not miraculous but were in accordance with Divine Law, and Christ's command to his disciples, "Heal the sick," was a command not only to the twelve and to the seventy, but to all those of any age who acknowledge Him as their Master.

The first Christian Science Church was established in Boston in 1879. It is known as the "Mother Church." In 1894 the first church edifice was erected in that city at a cost of $250,000. Eight years after it was built, a larger structure became necessary. The church voted to apply any necessary part of $2,000,000 to this purpose. The extension, erected on a lot adjacent to the first church was dedicated in 1906, at which time 40,000 Christian Scientists assembled in Boston to attend the service. There were at that time in existence in various parts of the world 930 Christian Science Churches and Societies. Since then the denomination has issued no statistics, but its growth has been more rapid than at any previous period. The form of church government is congregational, that is, there is no central government. The manual of the "Mother Church" serves as a model for other church manuals. No pastor is employed; a "First Reader," and "Second Reader," appointed from among the congregation for a period of three years, conduct the services. Almost every church maintains a reading room where Christian Science literature may be read or purchased. A Board of Lectureship delivers lectures in various cities under the auspices of local churches. The Christian Science Publishing Society issues a weekly paper, the *Christian Science Sentinel,* and a monthly, *The Christian Science Journal*, founded in 1883. The *Christian Science Monitor* is a daily newspaper. The first issue appeared November 24, 1908. It is not designed to propagate the doctrines of the denomination, but is a regular newspaper, differing from other such sources of information in that nothing unwholesome or sensational ever appears.

The instances are few in the world's history where a system of religious or philosophical teaching has made greater progress than has Christian Science. Although its principles may be rejected its influence has had its effect. It was the first step in the reaction from the intensely materialistic to the more spiritual mode of thought. As a result numerous movements of a more or less similar character have sprung up. Notable among them is the Emmanuel Movement instituted by Rev. Dr. Elwood Worcester and Rev. Samuel McComb in the Emmanuel Episcopal Church at Boston. This movement resembles Christian Science only in the fact that it combines religion and therapy. Its theory is entirely another matter. Sin and disease are treated as realities. The methods of healing employed are in accordance with the views of leading psychologists and neurologists. Moreover, no attempt is made to cure organic diseases. The plan of work in the Emmanuel Church has been followed by other churches of various denominations throughout the country and classes are organized for the moral and mental treatment of nervous disorders.

Mind Cure, Faith Cure, Mental Science, Metaphysical Science, Metaphysical Healing, New Thought, are terms one hears on every side. They designate various, though frequently rather loosely defined methods of the drugless healing of disease. Mrs. Eddy and the Christian Science denomination as a whole have made special and earnest effort to keep their particular views entirely distinct from any form of therapeutics which admits the reality of evil in the form of sickness or disease. See EDDY, MARY BAKER; SCIENCE AND HEALTH.

It (Christian Science) is the only world religion, so far as we can now remember, that had its rise in an English-speaking country, and is the only new one that has been created for centuries. Wonderful spiritual forces must have been set at work to accomplish this marvelous result. Somewhere in it must be germs of truth. Otherwise its story would be utterly inexplicable. No other recent cause has had such tremendous territorial extent, either in this country or in the world. All these things must be conceded by those to whom Christian Science is utterly enigmatical or anathema. These cannot understand the theory of its application, but they must admit the beneficent results that often come from this treatment and they recognize the satisfaction which Mrs. Eddy had a right to feel over the triumph of her cause. Few founders of a religion have been so rewarded in beholding the tangible success of their labors. Most of these founders died in ignominy and defeat.—*Boston Transcript.*

Christiania, the capital and metropolis of Norway. It is situated at the head of a fiord or inlet of the same name, about sixty miles from the open sea. The site is picturesque, being an amphitheater surrounded at a distance by high hills. The present city was founded in 1624 by Christian IV, whose name it bears. The port is defended by the fine old castle of Akershus, dating from 1300. The royal palace, the cathedral, the university founded in 1811, with its library and museums, are among the prominent buildings of the city. The city is screened from the north winds and enjoys a much milder climate than St. Petersburg. There are extensive breweries and manufactories of woolen cloth, soap, glass, tobacco, paper, and iron ware. The principal exports are lumber and iron. The harbor is closed by ice for about two months in the dead of winter. The population of the city proper is given at 241,834. With its suburbs and port, the city has not far from one-third of a million inhabitants. See NORWAY.

Christianity, the religion of Jesus Christ. It may be said to have been founded at his death by the dispersal and preaching of his disciples. Although the doctrines of Christianity are derived from the Hebrews, the Hebrews refuse to be reckoned as Christians. Christianity took root in Asia Minor, Greece, Rome, and northern Africa. As contrasted with Mohammedanism, Buddhism, and other great religions, it is now the prevailing religious faith of all Europe, Turkey excepted, Armenia, the Coptic people including Abyssinia, Australia and the surrounding islands, and both Americas. The Russians have carried Christianity into northern Asia; the English have carried it to India; missionaries have carried it everywhere. There are said to be at least 1,000,000 Christians in the Chinese Empire. The African colonies of the various European powers are, in large part, Christian.

The present branches of Christianity are as follows:

Churches.	Total Followers.
Catholic Church	230,866,533
Protestant Churches	143,237,625
Orthodox Greek Church	98,016,000
Church of Abyssinia	3,000,000
Coptic Church	120,000
Armenian Church	1,690,000
Nestorians	80,000
Jacobites	70,000
Total	477,080,158

Dr. Zeller, director of the German Statistical Bureau, writing in 1910, claimed 537,940,000 persons for Christianity; about one-third of the world's total population.

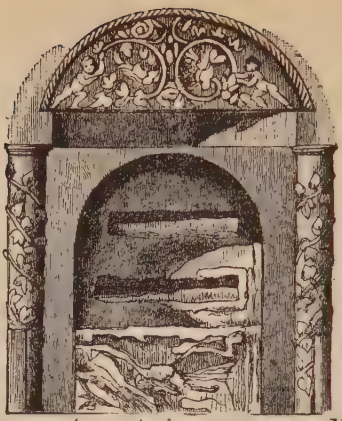
Christianity may be regarded as a religion and as a civilization. In the latter respect it differs very considerably from the precepts of Christ. Christ enjoined peace. Christians are noted for conquest and fighting. Regarded as a civilization, rather than as a religion, it may be said to have followed the flags of the nations of Europe ever since the day of Charlemagne.

The following shows the membership of the leading denominations in the United States in a recent enumeration:

Methodist Episcopal (South)	2,103,000
Roman Catholic	15,742,262
Methodist Episcopal	3,718,390
Regular Baptist (South)	2,054,301
Regular Baptist (colored)	1,864,877
Regular Baptist (North)	1,187,356
Disciples of Christ	1,274,725
Presbyterians	2,083,617
Protestant Episcopal	884,553
African Methodist Episcopal	858,323
Congregationalist	721,553
Lutheran Synodical Conf.	672,049
African M. E. Zion	583,106
Lutheran General Council	447,118
Latter Day Saints	350,000
Reformed (German)	289,328
Lutheran General Synod	280,978
United Brethren	279,846
Presbyterian (South)	269,733
German Evangelical Synod	238,805
Colored Methodist Episcopal	224,700
Methodist Protestant	190,708
United Norwegian Lutheran	156,936
Spiritualists	150,000
Greek Orthodox (Catholic)	130,000
United Presbyterian	129,564
Primitive Baptist	126,000
Reformed (Dutch)	117,139
Lutheran Synod of Ohio	110,877
Evangelical Association	105,733
Lutheran Synod of Iowa	100,500
Dunkard Brethren (conserv.)	100,000

Christmas, the anniversary of the birth of Christ. It is observed on the twenty-fifth day of December—one week before the New Year. The celebration dates from the fourth and fifth centuries. Among

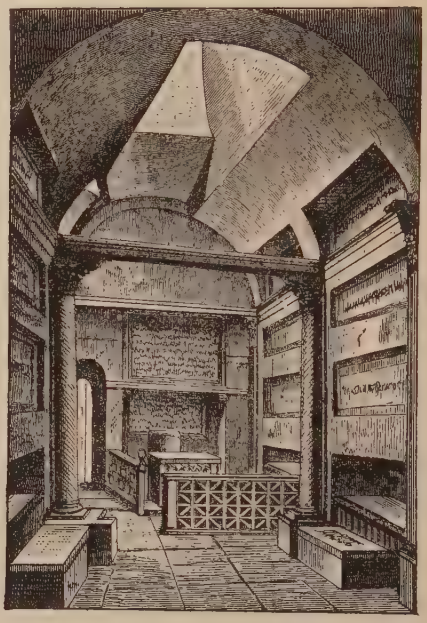
The Good Shepherd, Crypt of St. Agnes, Rome.



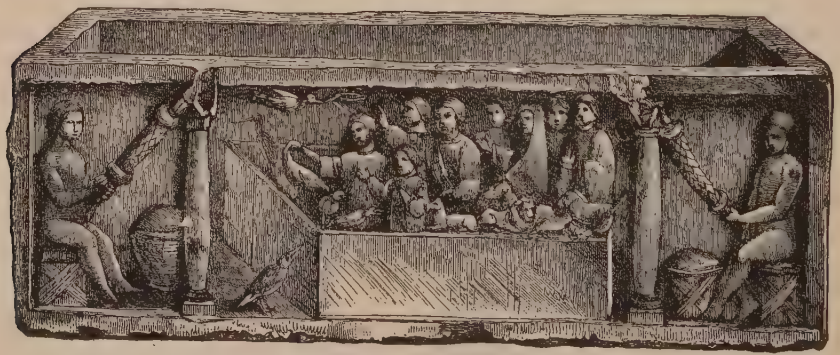
A martyr's grave, Catacombs, Rome.

Moses striking the rock, Crypt of St. Agnes, Rome.

A catacomb, present condition.



Same, restored.



Sarcophagus, with Noah's Ark in relief, Treves.

the Romans certain Christian practices were adopted from an older pagan feast in honor of the birth of the sun or Sol. Among people of Germanic ancestry, including the English, the celebration of the Christmas season, with holly, mistletoe, wassail, and the Yule log, are relics of an old pagan festival commemorating the shortest day of the year. The custom of making presents at Christmas time is associated in the popular mind with the gifts presented to Christ by the Wise Men of the East; but in reality, at least so far as English-speaking people are concerned, it is derived also from an old heathen usage. The custom of decorating Christmas trees has been traced from Rome to Germany, from Germany to England, and from England to the United States. The prejudice against Christmas observance, as too strongly tinctured with the heathen tradition, was so strong in Scotland that, until recently, children in Presbyterian families had no Christmas. Even yet it is not a popular holiday in Scotland. In New England at an early day, it was considered inappropriate—irreverent—to celebrate Christ's birthday with feasting, gift giving, and jollity. See NICHOLAS, SAINT; HOLLY; MISTLETOE.

I heard the bells on Christmas Day
Their old familiar carols play,
And wild and sweet
The words repeat
Of peace on earth, good-will to men.
—Longfellow.

Christmas Stories, a collection of tales by Charles Dickens. It was Dickens' custom to write each year some Christmas tale or a short magazine sketch that would lead families to live in happiness and harmony. Collected in book form, the *Christmas Stories* comprise about fifteen short stories and five of somewhat greater length. Some stories are included which are not distinctively Christmas stories. The best known of these tales are *A Christmas Carol,* published in 1844, *The Chimes,* 1845, and *The Cricket on the Hearth,* 1846. These are the best Christmas stories ever written. Lord Jeffrey said that since Christmas, 1842, Dickens "had done more good, and not only fostered more kindly feelings, but prompted more positive acts of benevolence, than can be traced to all the pulpits and confessionals."

A Christmas Carol is the tale of a rich, miserly, hard-hearted old fellow, who, under the guidance of a ghost and three spirits, is awakened from his selfishness to feelings of generosity and human kindliness. Thackeray says of it:

Was there ever a better charity sermon preached in the world than Dickens's *Christmas Carol?* I believe it occasioned immense hospitality throughout England; and was the means of lighting up hundreds of kind fires at Christmas-time; caused a wonderful outpouring of Christmas good feeling; of Christmas punch-brewing; an awful slaughter of Christmas turkeys, and roasting and basting of Christmas beef.

The Cricket on the Hearth is a picture of domestic happiness and contentment. The progress of the story gives glimpses of possible misery—such misery as selfishness and disloyalty may bring—but all ends happily. Everybody develops the "capacity of being jovial" and of hearing the cricket's chirp, the fairy voices and "everything that speaks the language of hearth and home."

The Chimes is a "Goblin Story of Some Bell That Rang an Old Year Out and a New Year In." It shows us something of the deprivations and sorrows of the poor, but more of the blessing and happiness that may be theirs; something of the harm done by "fears and jealousies, and doubts and vanities, more of the good accomplished by the honest affection of those "who trust and hope, and neither doubt themselves nor doubt the good in one another."

In came Mrs. Fezziwig, one vast substantial smile.

Christopher North. See WILSON, JOHN.

Christopher, Saint, a saint of the Roman Catholic and Greek churches. He was supposed to have suffered voluntary martyrdom in the third century. The story runs that he was put to the torture by the prefect Dagnus, that nothing could be found to harm him, but one of the poisoned arrows shot at him rebounded and injured the eye of Dagnus. In pity Christopher laid his own head upon the block knowing that his blood would heal the

wound of his tormentor. Dagnus' eye was restored and he was converted to Christianity. According to the old legend, Christopher's name had been Adokimos, which means the Unrighteous. He was a native of Syria, and a man of gigantic stature, measuring twelve feet in height, well proportioned and strong. Proud of his size and strength, he determined to devote his power to the service of the greatest of rulers. He therefore found, as he believed, the most powerful prince on earth and served him faithfully. But one day, while journeying through a lonely country, they came to a place where two roads met. The prince made the sign of the cross. "Why do you do that?" asked Adokimos, who was a heathen. "For protection against the power of Satan," answered the monarch. "Then, if you fear Satan, he is more powerful than you, and henceforth I will serve Satan." So the giant served Satan. Once, however, in a wood he saw Satan tremble before an image of Christ, and immediately he forsook his master and sought for Christ that he might serve the most powerful only. For long he searched in vain, but at last a pious hermit taught him of Christ and baptized him. But Adokimos said, "I cannot spend my life in prayers and fasting; I should then lose my strength and that is all I have." So the wise hermit stationed the giant in a little hut beside a stream which holy pilgrims often wished to cross, and bade him bear over such travelers on his mighty shoulders. For many years Adokimos lived beside the river and patiently and faithfully performed his task. One dark night a little child called for his services. Adokimos set the boy on his shoulders and plunged into the stream, but as he advanced the burden grew heavier and heavier until he could scarcely stand even with the support of his strong staff. He was tempted to throw off the burden, but struggled on, and at last, exhausted, set the child down on the further bank. Then Adokimos looked at the little one and saw to his astonishment that a glory shone about its head. "Thou shalt no more be called the Unrighteous," said the child, "but thou shalt be called Christopher, because thou hast borne the Christ. In bearing me, thou hast carried the sins of the whole world." Then he thrust the giant's staff into the ground and disappeared. In the morning the staff had taken root and bore leaves and buds and blossoms, that all men might know that Christopher spoke the truth when he said he had borne the Christ.

Chromium, krō'mĭ-um, a hard metal known chiefly to chemists. The name is derived from chrome, meaning color, and was given to this substance because it produces many-colored compounds. It has a bright, metallic luster, and is capable of a high polish, but it is difficult to melt. In nature it occurs in combination with iron ore. Naturally its production may be expected chiefly in iron regions. It is found abundantly in several states of the Union, but at present California is the American source of supply. It is produced in the Ural Mountains, in Greece, and in Austria, but the world's supply comes chiefly from a mine near Brusa in Asia Minor. By itself the element chromium is of no particular importance, but its compounds are valuable. A small amount added to steel produces so-called chrome steel, noted for its hardness. It is used in the manufacture of burglar-proof safes and edged tools. Chrome yellow and chrome green are used in staining glass, glazing porcelains, and as mineral dyes. In combination with potash, chromium is used in calico printing. The beautiful green of the precious emerald stone is thought to be due to a trace of chromium.

Chronicles. See BIBLE.

Chronology, the science of dates. The Chinese reckon their dates from the accession of the reigning emperor. The Greeks reckoned from the alleged beginning of the Olympic games, which, according to their traditions, was about the year 776 B. C. The Romans reckoned from the traditional founding of their city (753 B. C. by our reckoning). After the establishment of the empire, they dated by the reigns of the emperors. This remained the fashion of the Christian world until nearly the year 800 of our present reckoning. At that time the popes of Rome had been waging a century of struggle against

the emperors at Constantinople for virtual independence, and Pope Hadrian signalized the papal victory by ceasing to date events by years of the reigning emperor. Instead, he called a certain day "December 1, of the year 781, under the reign of the Lord Jesus Christ, our God, and Redeemer." The Christian world, except for the Greek Church, has dated time ever since from the birth of Christ, as figured by Hadrian, shortening the expression to "year of our Lord" (in Latin, *Anno Domini,* or A. D.). It is worth noting that Hadrian erred four years in his computation. He should have made his year 785. Because of this error we are obliged to say that Christ was born in 4 B. C. The Greek Church reckons from the creation of the world, which makes its dates 5,508 years greater than ours.

In nearly all systems the year is the unit. Among the Greeks, however, the period was one of four years, or an olympiad, the interval from one Olympic game to another. The end of the tenth olympiad was ten times four years later than 776 B. C. To find the second year of the eleventh olympiad in our reckoning, we should add two years to four times ten years, and subtract the result, or forty-two years, from 776 B. C. The Mohammedans reckon from the Hegira, or flight of Mohammed, which occurred in the year of 622 A. D. To change a Mohammedan date, therefore, into our reckoning, it is necessary to add 622 years. Without doubt a time will come when all commercial people will use the same system of chronology,—possibly that now in use among English-speaking people.

See CALENDAR; YEAR; DAY; MONTH.

Chrysalis, krĭs′ă-lĭs. See BUTTERFLY.

Chrysanthemum, krĭs-ăn′the-mŭm, a flowering herb belonging to the aster family. The name is Greek, meaning golden flower, having reference to the yellow straps of the corolla. The original type had but a single row of strap-shaped flowers. The double varieties have been obtained by causing the small, five-pointed corollas of the disk flower to develop into straps. The florists of China and Japan excel in the cultivation of this flower. Our large flowered varieties are obtained from a blending of two species that grow wild in China and Japan. Although the original color was yellow, the florist now produces white, pink, bronze, and crimson, as well as saffron-colored varieties. Botanically the common ox-eye daisy, or whiteweed, and the marguerite flower are chrysanthemums.

Chrysostom, krĭs′ŏs-tŏm, **St. John** (347-407), the most famous of the Greek fathers and the author of voluminous works of a religious or ecclesiastical character. The name, Chrysostom, means golden-mouthed, and was given him on account of his eloquence. Chrysostom was born at Antioch of a noble family. He studied oratory under the sophist, Libanius, but was "stolen away to a life of piety" as his teacher expressed it. His mother's influence, it is believed, led him after six years spent in study and meditation in a desert, to enter the church. He was ordained deacon and presbyter at Antioch and in 398 was appointed Archbishop of Constantinople. In both cities Chrysostom by his zeal and eloquence gained enemies as well as friends. For such sins as idleness, simony, and immorality in monks or bishops under him he had no sympathy, but promptly punished the offense by deposing the offender or turning against him the power of his eloquence. He lessened the expenses of church and ecclesiastics, bestowing the money thus saved in charity and winning the name of "John the Almoner" thereby. Not even the court escaped his efforts at reform; with fiery eloquence he attacked its evils from the pulpit, neither magistrates, ministers, court ladies nor the empress herself escaping. He was tried for heresy, condemned and banished to Nicæa. But the common people loved Chrysostom, and they besieged the palace with such irresistible fury that the emperor recalled him. The court did not mend its ways, however, and Chrysostom's "golden mouth" continued to inveigh against it. He was banished again, to the Taurus Mountains this time. Even here the sympathy of his friends reached him and his letters continued his influence. At last the emperor ordered his removal to

the extreme corner of the eastern empire. He was made to take the journey on foot, bareheaded, beneath a burning sun. He was an old man, much spent with labor and an ascetic life, and before the shore of the Black Sea was reached, he died. Thirty years later his bones were brought back to Constantinople with great pomp and the emperor publicly prayed that heaven would pardon the guilt of his ancestors. The Greek church celebrates November 13 in honor of St. Chrysostom; the Roman church, January 27.

Chuck-will's-widow, a bird of the goat-sucker family, allied to the whip-poor-will, but larger. Its notes and habits are like those of the whip-poor-will. It feeds on the wing by catching insects. It has an enormous mouth. Chapman is authority for the occurrence of humming birds and sparrows in its stomach, which he kindly covers with the mantle of charity by suggesting that these small birds may have been mistaken for large moths. Two dull white eggs, with lilac markings, are laid on the ground or on leaves in thickets and groves. See WHIP-POOR-WILL.

Chudder, or **Chuddah.** See CASHMERE SHAWL.

Church, a term applied to a body of religious believers; also to the buildings in which worship is held. The twelve largest church edifices in the world are as follows: Milan cathedral, with seating or standing capacity for 37,000; St. Peter's, 32,000; St. Paul's, 25,600; San Petronio, Bologna, the Florence cathedral, and the Antwerp cathedral, about 24,000 apiece; St. Sophia, Constantinople, 23,000; St. John Lateran, Rome, 22,900; Notre Dame, Paris, 21,000; Pisa cathedral, 13,000; the cathedral of the City of Mexico, the cathedral of Notre Dame in Montreal, and St. Stephen, Vienna, 12,400. With the exception of St. Paul's, which belongs to the Church of England, and St. Sophia, which belongs to the Greek Church, these edifices are all Roman Catholic churches. See CATHEDRAL; BASILICA; TEMPLE.

Churchill, Randolph Henry Spencer, Lord (1849-1895), an English statesman, son of the sixth Duke of Marlborough. He was educated at Eton and Oxford. In 1874 he married an American girl, Miss Jennie Jerome of New York, and the same year entered Parliament. Eventually he became a leader of the Conservative Party, and thenceforth was prominent in British politics. After a year as secretary of Indian affairs, he became chancellor of the exchequer in 1886 and leader of the Conservatives in the House of Commons. Owing to differences with his colleagues, he resigned in a short time, but re-entered Parliament in 1892, where he served the remaining three years of his life.

Churchill, Winston (1871-), a popular American novelist. He was born in St. Louis, Missouri. He was graduated from the United States Naval Academy in 1894, and became an editor of the *Army and Navy Journal.* Later he held the position of managing editor of the *Cosmopolitan.* His best known works are the historical novels, *Richard Carvel, The Crisis, The Celebrity, The Crossing, Mr. Crewe's Career,* and *Coniston.* In his later writings Mr. Churchill has shown a grasp of the way in which legislatures and courts may be, and too often are, manipulated in favor of special interests.

Churn. See BUTTER.

Cibber, sib'êr, **Colley** (1671-1757), an English actor, dramatist, and poet. He was born in London. When eleven years old he was sent to the free school at Grantham where he made a record, not alone in his studies, but by writing an oration on the death of Charles II, and an ode on the accession of James II. Later he showed a passion for the theater and beginning by performing gratuitiously gradually established a reputation as an actor. In 1710 he became manager of the Drury Lane Theater continuing to act until 1733. He began to write early in his career as an actor, his first comedy, *Love's Last Shift,* appearing in 1696. This was followed by twenty-nine other comedies which enjoyed considerable popularity and for which it is claimed that they helped reform the stage since always the immoral characters return to the paths of virtue in the closing scene. Novelty, a young fop, is a character of many of these plays in the presentation

of which Cibber won distinction. In 1730 the dramatist was made poet laureate, but his poems were of no value and won him only ridicule. In 1740 he published an amusing autobiography, entitled *Apology,* of special value for the vivid picture it gives of the stage in the age of Queen Anne.

Cicada, sĭ-kā′dȧ, a large insect distinguished by a locust-like trill or chirp. It is allied to the bugs. The periodical cicada, or seventeen-year "locust," as it is improperly called, has a remarkable life history. Some summers the trees are full of cheeping cicadas. The noise is made by the male who takes no food and soon dies. It proceeds from two membranes stretched over cavities like a drum, and set in vibration by muscles. The females live a few weeks and lay their eggs in slits in the twigs of trees. In the fall the young nymphs drop to the ground and burrow in the earth. They attach themselves to the roots of trees where they suck the juices and burrow for years. The seventeenth summer they emerge from the ground again and fill the trees with chirpings, lay their eggs, and die. If there be but one brood in a locality, as is frequently the case, cicadas will be in evidence only every seventeenth year.

Inside of the limits indicated by southern Georgia, Kansas, and New England, over thirty broods have been located. One of these extends over a large area in southern New England. In some localities several broods are known to exist, dating from different years, thus appearing with seeming irregularity. South of the range of the seventeen-year cicada there are broods of a thirteen-year species. The large harvest fly of black and green, with its sharp midday trill, is a two-year cicada. There are two broods of this species, so that each summer has its adult brood.

Like the grasshopper and the cricket, to which it is not in any way related, the cicada has attracted the notice of the poet. The cicada of the Isles of Greece is thus addressed by the Greek Anacreon:

TO THE CICADA.

O thou, of all creation blest,
Sweet insect! that delight'st to rest
Upon the wild wood's leafy tops,
To drink the dew that morning drops,
And chirp thy song with such a glee
That happiest kings may envy thee!
Whatever decks the velvet field,
Whate'er the circling seasons yield,
Whatever buds, whatever blows,
For thee it buds, for thee it grows.
Nor art thou yet the peasant's fear,
To him thy friendly notes are dear,
For thou art mild as matin dew,
And still, when Summer's flowery hue
Begins to paint the bloomy plain,
We hear thy sweet prophetic strain;
Thy sweet prophetic strain we hear,
And bless the notes and thee revere.
The Muses love thy shrilly tone;
Apollo calls thee for his own;
'T was he who gave that voice to thee;
'T is he that tunes thy minstrelsy.
Unworn by age's dim decline,
The fadeless blooms of youth are thine.
Melodious insect! child of earth!
In wisdom mirthful, wise in mirth.
Exempt from every weak decay
That withers vulgar frames away,
With not a drop of blood to stain
The current of thy purer vein;
So blest an age is passed by thee,
Thou seem'st a little deity.

—*Transl. of Moore.*

Cicero, sĭs′e-rō, **Marcus Tullius** (106-43 B. C.), the foremost orator of Rome. He was born in Arpinum, sixty miles southwest of Rome, January 3, 106 B. C. His father, a prosperous knight, removed to Rome to give his sons an education. Cicero studied grammar, rhetoric, elocution, and history under the best instructors to be found in the city. Then, as now, the law was regarded as an avenue to political life. Cicero attached himself to a prominent jurist named Scaevola, said "to be the most eloquent of those skilled in law; the most skilled in law of the eloquent." At the age of seventeen he served in the army. Every gentleman's son was expected to acquire some knowledge of military science. Entering upon the practice of law, Cicero won a reputation by his eloquent pleas in the courts. It was necessary to remain obscure or to take sides in politics. Cicero espoused at first the cause of the democracy, as opposed to the aristocratic party. Not satisfied with removing opponents from office, party feeling ran so high that whenever a new party came into power it considered itself unsafe until it had put a

few thousand of the opposing party to death.

During the triumphs of the aristocrats under Sulla, Cicero thought it wise to go abroad and improve his mind by study and travel. On the death of Sulla he deemed it safe to return to Rome. In the year 76 he was elected to the quaestorship, and was assigned the governorship of Sicily. Little is known of his experience in this capacity, beyond the fact that he was considered honest and capable and was held in esteem by the inhabitants of this island. Service in this position entitled him to a life membership in the Senate.

Cicero now set his eye on the consulship, a position corresponding in a rude way to that of our mayor, or possibly the president of a republic. To guard the interests of the people, two consuls were elected to serve conjointly. Cicero served first as aedile, a sort of police commissioner, and then as a praetor, corresponding in a general way to a judge—both with a view to election as consul, to which honor he succeeded in the year 63 B. C. This made him the head of the general executive and administrative business of the state. Wherever he went he was preceded by attendants carrying bundles of rods as symbols of his authority. During his consulship a bankrupt rival for the position, named Catiline, organized an infamous conspiracy to overthrow the government. Cicero by his watchfulness kept track of Catiline's movements and caused him and several of his leaders to be arrested. Cicero obtained a vote of the senate authorizing him to secure the safety of the commonwealth. This vote he interpreted by causing his prisoners to be put to death in a dungeon. This execution, though done under authority, was contrary to an act providing that no citizen of Rome should be executed judicially without the right of appeal to the people in a public meeting.

In 58 B. C. a political opponent worked upon the people to secure the passage of a bill depriving Cicero of the privilege of fire and water within a radius of 400 miles from Rome. The mob pelted Cicero with mud as he passed along the streets. He withdrew to Thessalonica. His beautiful house on the Palatine Hill and a country place in the suburbs were confiscated and plundered. In 57 B. C. he was brought back to Rome by Pompey, "borne on the shoulders of all Italy," amid general rejoicing.

In 53 B. C. he was placed on the board of augurs, a sacred college of fifteen members entrusted with the duty of seeking and interpreting the omens of the gods. They also held festivals, consecrated temples, and performed other religious rites. In *Spectator,* No. 505, we find the following comment, "Can anything be more surprising than to consider Cicero, who made the greatest figure in the Senate of the Roman commonwealth, and at the same time outshines all the philosophers of antiquity, as busying himself in the college of augurs and observing with religious attention after what manner the chickens pecked the several grains of corn which were thrown to them?" In reality the augurs had considerable political power. If they feared, for instance, that an election might be adverse, they could, and not infrequently did, announce that the omens —the auspices of the gods—were not favorable for an election on that day. Other minor positions were held by Cicero. He rejoiced in the death of Caesar at the hands of conspirators, thinking that the republic might be restored.

The party of Mark Antony, however, gained the ascendency and condemned Cicero to death, 43 B. C. He might have saved his life by flying from Italy, but could not prevail upon himself to go farther than his country villa. Here hired assassins found him. His slaves tried to hurry him away to a place of concealment in a covered litter, but were overtaken. Cicero put his head out of the litter and met his fate. His head and his hands were cut off and taken to Rome where they were subjected to insult by Antony and nailed to the Rostra, the scene of many an oratorical triumph.

As a statesman Cicero was not practical. He tried to restore the days of the old republic, no longer possible. He was egotistical, but patriotic; theoretical, but sincere; vain, but not selfish. A far more

favorable impression of his daily life may be obtained from his letters than from the orations generally read in school. From these letters we may see that he was kind-hearted, generous, and affectionate. The sources of his wealth are not known, but he was famous for fine country villas, artistic furniture, a well stored library, and beautiful pieces of painting and statuary. As an orator and master of Roman prose his name stands first. Some fifty-seven of his speeches, a score of fragments, and the titles of thirty others are still extant. They were written on long rolls of parchment, no doubt. None of the originals are known. Copies of the Catilinian orations are numerous. The very oldest, that in the famous library at Milan, was made a thousand years after Cicero's death.

Cid, sĭd, **The Poem of the,** the national Spanish epic, and the most ancient epic in any of the Romance languages. This poem recounts the achievements of Rodrigo Diaz who lived 1020-1099. He won the name of Cid from the fact that in one battle five Moorish kings acknowledged him their lord and conqueror, or *El Seid,* an Arabic word meaning lord, of which Cid is the Spanish equivalent. The Spaniards gave Diaz also the title of El Cid Camppeador, or the Lord Champion, a fitting title for him who was the "dauntless champion of the Christian religion and of the old Spanish monarchy against the Moors." He spent his life in wars against his country's oppressors and his country rewarded him by making him immortal in song and story. His memory is still sacred among his fellow countrymen. *The Poem of the Cid* contains about 3,000 lines. It dates, probably, from the year 1200. It presents most vividly the manners and the spirit of the eleventh century in Spain. It is natural, full of sympathy and charm. The author, authors, or compilers of the poem are unknown. The French Corneille has made the *Cid* the subject of one of his most successful dramas. See Epic; Corneille.

Cider, a beverage made from the juice or sap of apples. Apples contain a large percentage of juice which may be pressed out by passing the apples through a cider mill. It is considered that red apples make better cider than green or yellow ones. A bushel of apples yields about a gallon of cider. Fresh cider contains yeast plants, resident perhaps on the skin of the apple, which attack the sugar of the juice at once, converting it into alcohol. For this process, known as fermentation, see article on Yeast. The longer cider stands, the more of its sugar is converted into alcohol and the sharper the cider becomes. Hard cider is simply cider in which considerable sugar has been changed into alcohol by the process of fermentation. If cider be bottled to keep yeast out, and be boiled to kill yeast within, it will keep fresh for a long time. The making of cider has been inherited from England and Normandy. In the production of cider New York, Pennsylvania, Ohio, and Indiana lead. The United States presses from 1,500,000 to 2,000,000 barrels a year, according to the apple crop. Wormy apples and fruit not salable are usually put through the cider mill after the hurry of marketing is over. A large share of American cider is converted into vinegar. Cider was formerly a more popular beverage than now. In *Snowbound* Whittier speaks twice of the cider mug:

> And, for the winter fireside meet,
> Between the andirons' straddling feet,
> The mug of cider simmered slow,
> The apples sputtered in a row,
> And, close at hand, the basket stood
> With nuts from brown October's wood.

See Apple; Yeast.

Cigar, a cylindrical roll of tobacco for smoking. It is made of tobacco leaf divested of stems and rolled tightly in a strong leaf or wrapper. One end is pointed for lighting, the other for insertion in the mouth. A similar roll of tobacco, not pointed at the ends, is called a cheroot. Broken tobacco rolled in a piece of corn husk or rice paper is called a cigarette or little cigar. The name cigar was given originally by the Spanish to a kind of tobacco grown in Cuba. The most expensive cigars are those produced in a favored district of this island. They sell at wholesale at a dollar apiece. The leaf of the tobacco raised in Sumatra is much used for

wrappers. Cigarettes and cheap cigars are made by machinery. The more expensive are rolled by hand. There were 14,539 cigar factories in the United States in 1900; in 1905 there were 16,395. The total output for the year 1905 was approximately 7,376,000,000 cigars and 3,500,000,000 cigarettes. The manufacture of cigarettes is decreasing; that of cigars is increasing. An excellent authority claims that at the beginning of the present decade, 8,000,000,000 cigars were produced annually in the United States. In addition to this we import 200,000,000 cigars from Cuba, Porto Rico, and the Philippines, bringing the total consumption of cigars and cigarettes up to 13,000,000,000—an average of 160 for each man, woman, and child in the Union, with a corresponding increase in the number of consumers. According to these figures the American smoker pays out not less than $900,000,000 a year for cigars and cigarettes. This seems very large in comparison with $25,000,000 a year for books, and $80,000,000 a year for papers and magazines. In fact, the cost of books, newspapers, magazines, libraries, churches, schools, and colleges, in other words the total amount spent for mental improvement in this country, is but a fraction of the cost of cigars and cigarettes. See TOBACCO.

Cimabue, chē-mȧ-boo′ā, **Giovanni** (1240-1302), a noted artist of Florence, Italy, called sometimes the Father of Modern Painting. In Cimabue's time art in Italy had fallen into a state of decadence, everything was mechanical and conventional. He aimed to restore classical ideals and was the first of his day to attempt to follow nature in his paintings.

Cimabue's first masters were Greeks, who had been asked to come to Florence to decorate the church of Santa Marie Novella. These masters are perhaps responsible for the fact that Cimabue's models are largely from the works of ancient Greece. His paintings are regarded as a connecting link between ancient and modern schools. He is credited with having founded the Florentine School of painting to which Michelangelo and Raphael belonged.

Of Cimabue's works little remains. Two madonnas are preserved in Florence, and other paintings may be seen in the church of St. Francis at Assisi. See GIOTTO.

Cimon, si′mon, an Athenian general of the fifth century B. C. He was the son of Miltiades, the great general who won fame at Marathon. Cimon fought against the Persian forces at Salamis. With Aristides he was in charge of a fleet sent to deliver the Greek colonies in Asia Minor from the Persian yoke. From the expedition Aristides soon returned to Greece, leaving in sole charge Cimon who distinguished himself by various achievements, the greatest of which was his encounter with the Persians at the River Eurymedon. Cimon followed the Persian fleet up this river, destroyed or captured between two and three hundred ships, and defeated the army utterly in an engagement on land. The spoil which he took was taken by him to Athens and used for the embellishment of that city. But Cimon's success aroused jealousy among other generals and various popular leaders began to fear his power. After other attempts to injure him had failed his banishment was secured by reason of the Lacedaemonians scornfully rejecting the aid sent them in accordance with Cimon's advice. He was eventually recalled but died soon after while besieging Citium in Cyprus, 449 B. C.

Cinchona, sin-kō′na, or **Chinchona,** a genus of evergreen trees. They grow chiefly on the eastern slopes of the Andes from Colombia to Brazil, at an altitude of from 5,000 to 8,000 feet. They are the sources of Peruvian or cinchona bark and of quinine. There are about forty species. About a dozen are valuable commercially. The bark is removed by the natives, and is brought in for sale in bales. The derivation of the name is interesting. A countess of Chinchona, so called from the town of that name near Madrid, Spain, was the vice-queen of Peru. In 1638 she was cured of a fever by the use of Peruvian bark. The countess advertised the curative qualities of the bark, and the botanist, Linnaeus, immortalized the countess by naming the genus chinchona. The first "h" is omitted usually. The cultivation has been encour-

aged by the British and Dutch governments. Extensive plantations exist on the mountain slopes of Jamaica, the Himalayas, Java, and Ceylon. The bark is valuable for the extract known as quinine. About 4,000,000 pounds of cinchona bark are imported by American druggists yearly. See QUININE.

Cincinnati, a city of Ohio, the metropolis of the Ohio Valley. "The Queen City." It is situated on the northern bank of the Ohio River, very near the geographical center of the Ohio Valley. The site of the city is an amphitheater of hills from two to three miles in diameter. The center of the city is about sixty-five feet above low water. Terraces of approximately one hundred feet in height succeed each other to the level of the surrounding country which is from four to five hundred feet above the river. These terraces, interrupted by ravines in which the remnants of native forests still stand, afford one of the most beautiful residence sections in the world. Shaded dooryards command a magnificent prospect of river and valley and the Kentucky hills beyond. A public fountain, cast in bronze at Munich, cost $200,000. The city extends along the bank of the river for a distance of about fourteen miles. At the business center the sloping bank is paved with cobblestones. Floating piers, or wharves, that adjust themselves to the varying stages of water, are anchored by huge cables. The most noticeable commercial features are the great warehouses of tobacco, and the scows of coal that lie at anchor. The city is also one of the greatest pigiron markets in the United States, if not in the world. Numerous lines of steamers ply up and down the river carrying an immense amount of freight. Sixteen railroads enter the city, most of them through a long ravine that finds its way out through the amphitheater to the west. The river is spanned by five bridges, including the cantalever bridge of the Baltimore and Ohio Railway and a suspension bridge leading to the Kentucky suburbs of Covington and Newport.

Named in order of commercial importance, the leading manufactures are iron work, men's clothes, meat packing, distilled liquors, boots and shoes, carriages and wagons, tobacco and cigars, and beer. A vast amount of capital is invested in minor industries, such as tanning, furniture making, roasting coffee, and grinding spices. Saddles, harness, pickles, preserves, watches, organs, soap, candles, electric lamps, flour, patent medicine, and a great number of other articles are made for the various trades. It is estimated that over $500,000,000 worth of goods are distributed from Cincinnati annually.

Originally the city was a center of the mound builders. Some remains of the mounds may still be seen. An Indian trail leading southward from Detroit into Kentucky crossed the river at this point. The original town was surveyed in 1788. Cincinnati owes much to the enterprise and business sagacity of German citizens who are still a prominent element in the city. Cincinnati has one of the great music halls of the world. The population, as returned by the 1910 census, was 365,591. During the following decade, the increase was 37,567, which made the population 401,138 in 1920.

Cincinnati has one of the most complete systems of public education in the country. Primary schools and grammar schools are succeeded by a system of high schools, followed in turn by the University of Cincinnati, an institution maintained largely at public expense. Lane Seminary is a theological school maintained by the Presbyterians.

See OHIO

Cincinnati, Society of the, an organization of the officers of the American Revolution. The suggestion came from General Knox, while the army was yet encamped upon the Hudson. The organization was perfected May 10, 1783. The members had left their home at the call of duty, so they named the society in honor of the Roman Cincinnatus, who left the plow to defend the land. All Continental officers who had served with honor and resigned after three years' service as officers, or who had been rendered supernumerary and honorably discharged, in one of the several reductions of the American army, or who had continued to the end of the

war, and all French officers who had served in the coöperating army under Count d'Estaing, or auxiliary army under Count de Rochambeau, and held or attained the rank of colonel for such services, or who had commanded a French fleet or ship of war on the American coast, were entitled to become original members, and upon doing so were required to contribute a month's pay. Many of the signers of the Declaration of Independence were invited to become honorary members.

These words were used: "To perpetuate, therefore, as well the remembrance of this vast event as the mutual friendships which have been formed under the pressure of common danger, and, in many instances, cemented by the blood of the parties, the officers of the American army do hereby, in the most solemn manner, associate, constitute, and combine themselves into one Society of Friends, to endure as long as they shall endure, or any of their eldest male posterity, and in failure thereof the collateral branches who may be judged worthy of becoming its supporters and members." A constitution was adopted. Washington was the first president-general. Meetings were to be held in the several states on Independence Day, and a general encampment was to be held in May. A golden eagle fastened to a blue ribbon edged with white was chosen as a badge. The objects of the Society were to cement the Union and to provide for needy widows and children of members.

An idea got abroad, however, that the organization was political and un-American. A "howl of popular indignation" went up. To appease popular resentment Washington suggested the abandonment of the principle of heredity. The plan was recommended by the national society, but was not carried out. The society had in 1909 a state society in each of the thirteen original states. A society in France, which was disbanded during the Reign of Terror, 1793, has been reëstablished.

In 1908 there were 842 hereditary members. Jackson, Grant, Cleveland, and other presidents have been honorary members. Monroe and Washington were original members. President Pierce was a hereditary member. Roosevelt, Dewey, Ex-President Loubet of France, and other men of repute are on the roll of honorary membership. The city of Cincinnati was named for the society.

See CINCINNATUS.

Cincinnati Southern Railroad, a railway extending from Cincinnati, Ohio, to Chattanooga, Tennessee. It is the only steam railroad in America that is owned by a city. The history of the road is not without an element of sentiment that lifts it above commercialism. Cincinnati, the home of Mrs. Stowe when she wrote *Uncle Tom's Cabin,* gave deep offense to the Southern trade by an anti-slavery attitude. The influence of the pro-slavery men was thrown in favor of Louisville, a commercial rival of the anti-slavery city. At the close of the Civil War the wholesalers of Cincinnati felt that an effort must be made to regain trade. After preliminary agitation the legislature of Ohio granted authority. The citizens approved by referendum. Bonds were sold, not in a single issue, for $18,000,000. Congress gave permission to bridge the Ohio River; Tennessee gave a right-of-way to Chattanooga, and, after long urging, Louisville citizens not assisting, Kentucky granted permission to cross the state. The management of the enterprise was placed in the hands of five trustees named by the superior court. There was tremendous opposition to the unheard-of course of a city building a railroad lying in three sovereign states. Suits and injunctions, elections, and charges of dishonesty kept the board on its mettle. The road was completed in 1880. The event was celebrated with bonfires, banquets, and ringing of bells. The road was leased. In 1891 an attempt was made to buy the road; but the citizens who had voted to build the road now voted to keep it, and the road was leased instead for sixty years at a rental of $1,116,000 per annum.

Cincinnatus, the hero of a patriotic legend of Rome. Born about 519 B. C. He was an upholder of the patricians in their struggles with the plebians. He cultivated a field of four acres across the Tiber from Rome. In 458 a Roman army was hemmed in a defile of Mt. Algidus. The

senate named Cincinnatus dictator and sent deputies to inform "the sole hope of the Roman people." Livy tells the story:

> This man cultivated a farm of four acres. "There, either leaning on a stake in a ditch which he was digging, or . . . ploughing, . . . being requested by the ambassadors to listen to the commands of the Senate," he was saluted Dictator of Rome. Going immediately thither, he led the citizens against their foes, and soon returned victorious. "The leaders of the enemy were led before his car; . . . his army followed, laden with spoil." Having finished his task, he resigned his dictatorship on the sixteenth day of holding it, and returned to his farm.

Cinderella, the heroine of an old fairy tale, dearly loved of little folks. The story is doubtless of eastern origin, but is found in Germany as early as the sixteenth century, and in the French of Perrault soon after, whence it probably came into the English. As commonly told this story possesses many features delightful to the mind of a child, while lacking in those distressing elements found so frequently in old time tales. Cinderella—little cinder girl—is a poor little drudge. She has a hard-hearted stepmother and two proud, selfish sisters. But she has also a fairy godmother, with a wonderful wand! Her ragged gown is changed to a party dress. A fascinating pumpkin shell coach appears, with mice for steeds, lizards for footmen, and a long-whiskered rat on the coachman's box. Cinderella's beauty and happiness at the ball are most gratifying. But the clock strikes twelve, and the gay gown changes to rags as she runs for her coach. Then comes the search for a foot that can wear the glass slipper, lost in her haste. None but Cinderella's is small enough. She weds her prince. The sisters repent and are forgiven, and all "live happy till they die." We are told that the slipper should have been of fur; that the first Englishman who translated the tale mistook the French word *vair* for *verre,* similar in form and sound. But to the English or American child, the slipper of glass only adds another charm to the tale of her who "lay among the ashes and wedded the king's son."

Cinematograph. See MOVING PICTURES.

Cinnabar, the ore of mercury. It is a red, compact, very heavy mineral, composed chiefly of mercury and sulphur. It is found in California, Mexico, Chile, Japan, Spain, and Hungary. Mercury is obtained from the ore by roasting it in a retort. The pigment vermilion, used by painters for a brilliant red, is an artificial cinnabar in the form of a bright red powder. See MERCURY.

Cinnamon, the inner bark of a small tropical tree, closely allied to sassafras, the camphor tree, and the laurel of the poets. Cinnamon is cultivated chiefly in Ceylon, though it has been introduced in the West Indies. The cinnamon of commerce is the inner bark of the smooth growing branches of the tree. Shoots of about two years' growth are cut. The outer bark is scraped away, and the inner bark is peeled off in sheets which are dried in the sun. The sheets naturally curl into quills, the smaller of which are run into the larger and tied into bundles of about ninety pounds each for shipment. Cinnamon bark has a pleasing, sweet, warm taste and a delicate fragrance. It is much used to flavor cookery. Being expensive, ground cinnamon is apt to be adulterated. Cinnamon is a well established tint of brown. The cinnamon bear, for instance, takes the name from its color. See SPICE.

Cinque (sĭnk) **Ports,** in English politics, a collective term for the Channel ports, and territory subordinate to them. The word is French meaning five. The Five Ports were Hastings, Romney, Hythe, Dover, and Sandwich. Winchelsea and Rye were added, making seven. These Channel towns formed a sort of frontier exposed to French invasion. Before the formation of a national navy these towns lay under obligation to furnish men and ships for coast defense. After the practice of building ships at national expense became established in the reign of Henry VII, the Cinque Ports were under heavy naval obligations. They bore the brunt of the destruction of the Spanish Armada. In return for their obligations they held a charter granting special authority and special privileges. The oldest charter now on record is not ancient, but it refers to

a previous charter granted by William the Conqueror. The Cinque Ports and a number of subordinate villages were placed under a warden. The ports had a parliament and courts. They were empowered to deal with murderers and felons. They disposed of wrecks and property cast ashore by the sea. They levied tolls and ruled serfs; they were exempt from certain royal taxes; their parliament had authority to levy taxes for local purposes, and in many other ways the territory of the Cinque Ports was recognized as an independent, we might say, jurisdiction. A warden is still appointed, who acts as governor of Dover Castle, but the olden time prerogatives of the Cinque Ports have nearly all passed into national hands.

Cipango, sĭ-păng′gō, in Marco Polo's *Voyages* a name given to a group of islands east of Asia, supposed to be Japan. Columbus and other navigators made diligent search for Cipango, which Marco Polo had pictured in glowing terms.

Cipher, sī′fer, a method of sending written information in disguise. Spies sending intelligence of the movement of armies, orders sent to generals or naval commanders in foreign waters, and communications between governments and their foreign representatives are usually in cipher to prevent their being understood by unauthorized persons. In the Russo-Japanese War the Russian generals sent home their reports in cipher. They were translated in the war office, then laid before the czar. When the Russian peasants were shot down in the streets of St. Petersburg the Russian minister at Washington received a telegraphic account in cipher. If countries are at peace international courtesy requires the transmission of cipher dispatches without scrutiny or delay.

One of the simplest ciphers is the use of a dictionary. Thus: "9-3-685, 9-2-7024, 9-1-2657," referring to word, column, and page of the *Century,* would be deciphered to mean "bring your gun."

If it be desired to send the following message: "Owls meet by old oak at six," it may be done in a number of ways. We may use the letters that precede the real letters, assuming that z precedes a, thus: "n v k r l d d s a x n k c n z j z s r h w."

The letters that follow the real letters may be used thus: "p x m t n f f u c z p m e p b l b u t j y."

The words may be spelled backward, but this cipher is too easily read: "slwo teem yb dlo kao ta xis."

It is said that time, skill, and patience, with plenty of messages at hand, enable an expert to unravel any system of cipher ever invented. In his *Gold Bug,* Edgar Allen Poe gives a most ingenious account of the unraveling of a cipher scroll left by an old pirate to indicate where his treasure lay buried.

Modern cipher is known usually as a telegraphic code. The sender and receiver agree on a set of words and meaning. Each keeps a copy. Thus *Hamstrung bolo* may mean "Elevators are heavily loaded. Sell 600,000 bushels regardless of price," *Gopher flag* may mean "The enemy are digging mines under our largest battery. We must surrender within a week." In the first message, economy may be the motive for using a code, as telegrams cost by the word. In the second, secrecy is evidently desirable. When mere economy is desired, the sender uses usually what is known as the commercial code, a standard cipher dictionary, a copy of which is kept in all large commercial establishments and at telegraph offices. The United States government uses the Western Union code for ordinary messages. A private official code is used by the Department of State for diplomatic messages. Brokerage houses use special codes or a private code.

Circassia, ser-kăsh′ĭ-a, a region of Europe lying on both slopes of the Caucasus Mountains. It is now a part of Russia. The region is one of valleys, gloomy defiles, table lands, and glaciers. The country yields timber, oil, precious ores, and the products of the flock. The people, now almost replaced by inferior races, have been noted for graceful forms and great beauty. For generations the young folks seem to have been eager to leave their mountain home. The young men have sought employment abroad as soldiers, and

the young women have been marketed to traders who sold them at a profit to the Turkish harems. There appears to have been little sentiment against the practice, even on the part of the women themselves, who were enabled in this way to see something of life in distant cities.

In an article contributed to *Everybody's Magazine* for October, 1909, E. Baden Powell, a fellow of the Royal Geographical Society, writes entertainingly of the pains taken to perfect the complexions of the family beauties, the rivalry among the daughters to fetch a high price, and their expectation of luxurious life in the polygamous homes of the wealthy of Constantinople, Cairo, Smyrna, Fez, Bagdad, Teheran, or Mecca. The wife of the khedive of Egypt and the sultana of the deposed sultan, Abdul Aziz, were Circassian slave girls. Indeed, these fair-skinned Circassian beauties, if we may credit Mr. Powell, exercise petticoat government in the capitals of all Mohammedan countries. The young women are purchased by traveling buyers, usually Armenians, who pay down a part of the purchase price and the remainder on delivery at some obscure port on the Black Sea. They are forwarded to be sold at auction, usually at Constantinople, Smyrna, Saloniki, or Trebizond.

Mr. Powell's observations were made at first hand while traveling in the mountain villages of Circassia. He says:

I was repeatedly urged to buy a fine, buxom, upstanding creature for the equivalent of eighty dollars, while a ravishing beauty, who would have dislocated the necks of half the loungers on Fifth Avenue or Piccadilly, was offered me for double that sum.

Lest any conscientious reader of this article feel impelled to go out to the Caucasus and lend his efforts to the suppression of this pernicious traffic, I will repeat a little incident which was told me one night in the Officers' Club at Tiflis. Said one of my companions, a commander in the Russian navy, who was in Tiflis on a visit. "Despite the utmost efforts of our government, the slave-traffic between the Caucasus and Turkish ports has increased, of late years, rather than declined. So, when I was given the command of a gunboat two or three years ago, and ordered to patrol that fever-haunted Mingrelian coast on the lookout for smugglers and slavers, I was as proud as some of these Circassians with a new *bourka*. In the gray of an early morning, after endless days of waiting, we caught sight of a suspicious-looking steamer slipping swiftly and silently out to sea from a port that I knew was almost unused except for the loading of wood, certainly not by anything as swift as this boat. It was a stern chase from the first, for the steamer I was pursuing boasted good engines, and it was not until a shell from one of our forward guns whined across her bows that she hove to and waited sullenly for our approach. My gig was lowered away and I was rowed across to the ship. I found, just as I had expected, that she was packed from stem to stern with Caucasian beauties en route for the slave-markets of Constantinople. I might as well admit that, as I went aboard her, I rather likened myself to a sort of modern Sir Galahad saving damsels in distress, but my knightly dreams were quickly dissipated. I gave orders that a prize crew be put aboard and that the slaver be taken to Batum, whence the girls would be returned to their homes. All this I tried to explain to the throng of frightened, wide-eyed beauties who surrounded me, but no sooner were my intentions understood than they threw themselves at my feet, begging me with tears in their eyes not to send them back to the squalor of their mountain homes but to forward them at once to their Turkish destination.

See CAUCASIAN RACE.

Circe, ser′sē, in Greek mythology, an enchantress who lived in the island Aeaea. She was the daughter of Helios, the sun-god. In his wanderings after the Trojan war Ulysses landed at the Aeaean Isle. Observing no sign of habitation, except a palace surrounded with trees in the center of the island, he sent a part of his crew under the leadership of Eurylochus to investigate. On approaching the palace the men saw lions, tigers, and wolves that seemed very tame. Not realizing that these were men transformed by the magic of Circe, who inhabited the palace, they went on and at Circe's invitation entered the palace. Eurylochus, however, was cautious and remained outside. Circe feasted her guests, then touched each with her wand, and the whole number became swine in "head, body, voice, and bristles." Their intellects, however, were as before. The horrified Eurylochus returned to Ulysses and told what had occurred. Ulysses decided to release his companions. On his way to the palace he met Mercury who gave him a sprig of moly, a plant with power to resist sorcery. Ulysses entered the palace and was feasted as his friends had been; but when Circe touched him with her wand and commanded him to

become a swine, his form did not change as she expected, but, instead, Ulysses drew his sword and rushed upon her. She fell upon her knees and begged for mercy. This was granted, but Ulysses bound the sorceress by a solemn oath to release his companions, to practice no more charms upon them, and to dismiss them from her island in safety. Circe kept her word and made her home so pleasant for her guests that they remained a full year. At their departure she gave them aid and advice.

Who knows not Circe
Daughter of the Sun, whose charmed cup
Whoever tasted lost his upright shape,
And downward fell into a grovelling swine?
—Milton.

Circle, in geometry, a plane surface bounded by a single curved line, every point of which is equally distant from a a point within called the center. Properly speaking the space, not the bounding line is the circle. The saying that one lost in a storm is likely to travel in a circle, meaning to follow a circumference, is an illustration of the difference between popular and scientific language. Naturally enough the circle, one of the fundamental as well as one of the most graceful figures, attracted the attention of the earliest mathematicians. From the Babylonians we have the division of the circumference into 360 equal parts or degrees, and these into sixty minutes each, and the minutes into sixty seconds. Euclid, the Greek mathematician who taught at Alexandria about 277 B. C., enunciated and demonstrated the theorems of the circle in a manner little improved upon in modern textbooks. The problem of squaring the circle, or of finding the dimension of a square which shall be absolutely equivalent to a given circle, has been a standing problem for centuries. It cannot be solved owing to the fact that the relation between the circumference and the diameter cannot be found exactly. The well known ratio of 3.1415926535+ cannot be brought to an end. When one assumes to prove that certain angles are equal, because they are formed by a straight line intersecting parallels, and then undertakes to prove that the lines are parallel, because the angles in question are equal, he is said to argue in a circle.

Circuit Courts. See COURTS OF LAW.

Circulation, in physiology, the passage of blood from the heart into the arteries and from them into the veins and back through the veins into the heart. The human circulatory system consists of the heart, the arteries, the capillaries, the veins, and the lymphatic system.

Complete circulation is of two parts: The blood passes from the left ventricle to the arteries of the body, then through the capillaries to the veins, and returns to the right auricle. This passage is called systemic or body circulation. Without stopping, the blood passes into the right ventricle and is forced through the pulmonary artery into the capillaries of the lungs, whence it returns through the pulmonary veins into the left auricle, and through it, into the left ventricle. The trip to the lungs and return is called the pulmonary circulation.

The vessels that carry the blood away from the heart are called arteries. Those that carry the blood to the auricles of the heart are called veins. The arteries and veins correspond very generally in number, size, and location. In a general way an artery may be said to have a corresponding vein; but the walls of the arteries are thicker, stronger, and more elastic than those of the veins. The heart forces the blood out through the ventricles with considerable pressure. Near the heart, the pressure in the arteries is about a fifth greater than atmosphere pressure, but diminishes as the blood travels from the heart.

The great artery of the systemic circulation is the aorta. It rises from the left ventricle in an arch and passes down back of the heart, through the body cavity in front of the backbone. More than thirty branches go out from the aorta to the trunk and the internal organs. At the lower end of the abdominal cavity the aorta divides into two main branches, one going to each leg. Three branches rising from the arch of the aorta carry blood to the arms, the neck, and the head. The

arteries that rise, one on each side of the windpipe, are called carotid arteries. The large vessel carrying blood from the right ventricle to the lungs is called the pulmonary artery.

The vein which carries returning blood from the legs, the internal organs, and the trunk, is called the *ascending, or inferior, vena cava.* The blood from the head, neck, and arms returns through the *descending, or superior, vena cava.* The veins corresponding to the two carotid arteries are called jugular veins. The arteries branch again and again, until they are too small to be seen without the aid of a microscope. The veins branch likewise.

The blood passes from the ends of the arteries into the veins by small blood vessels known as capillaries, which are just large enough to allow the corpuscles of the blood to pass through. The name is derived from a Latin word meaning hair, but the capillaries are very much smaller than the finest hairs. They have the thinnest of walls, and are not to exceed a microscopic fraction of an inch in length. The veins and arteries are mere carriers. They are water-tight—we may say blood-tight—but the capillaries permit the escape of oxygen, white cells, and plasma. They also allow waste matter to pass from the tissues into the blood.

The arteries of the systemic circulation carry arterial blood—blood red with oxygen and rich with nourishment. The veins of the systemic circulation carry back dark venous blood—blood laden with carbon dioxide and the wastes of the tissues. The artery of the pulmonary system carries dark venous blood to the lungs. The four pulmonary veins bring bright arterial blood to the heart. The outgoing current of blood is driven by the muscular action of the heart. The walls of the arteries are smooth. The walls of the veins and lymphatic vessels, however, are furnished with valves which open toward the heart. The pulse of the blood in the arteries, breathing—every movement of the body that disturbs the blood or the lymph—causes these liquids to pass on toward the heart. The valves prevent a return.

There are numerous ordinarily minute crevices and cavities within the tissues, known as lymph spaces. In many parts of the body lymph capillaries form a network. The lymph vessels combine to form large ducts which empty into the veins. The largest of these is the left thoracic duct. It is about as large as a penholder. It carries lymph from the legs, the left side of the body, the neck, the head, and the arms. These lymph ducts empty into the large veins of the neck. The lymph vessels thus form a second drainage system.

The circulation of blood was not understood by the ancients. While it was known that the blood of arteries was connected with the heart, it was thought that the dark blood of the veins came from the liver, and that the two systems had no connection. Servetus, in 1553, discovered that blood passes from the heart to the body and back again; but the facts of circulation were not finally known until published by Harvey in 1628. The manner in which the blood manages to pass from the arteries to the veins was made known in 1661. The main features of the lymphatic system were made out at about the same time. As late as 1700 it was a grave question at Harvard College whether arterial blood and venous blood were the same.

The marvels of circulation are well told by Dr. Woods Hutchinson:

> In order to make this more clear, let us for a moment glance at the work of the heart. The heart is merely a hollow muscle, consisting of two pumps, one of which sends blood to the lungs, the other pumping blood through the tissues. Each side of the heart holds two ounces of blood; and as the heart contracts about 75 times a minute, this means that 150 ounces, or about 1⅛ gallons of blood passes through each side of the heart every minute. That is, about 70 gallons every hour, 1,680 gallons every day, 603,000 gallons in a year, is pumped by each of the ventricles, making the total work of the heart for the year 1,206,000 gallons. Think of the work done by the heart in ten years, in twenty, or in a lifetime! And the heart weighs about half a pound!
>
> The stream of blood leaving the heart travels 621 feet a minute, 7 miles an hour, 168 miles a day, 61,000 miles a year. No man probably has ever traveled so far as his own blood has. For the blood to make the entire double circuit from heart to lungs, then back to the heart, thence

to the tissues, and finally back to the heart again, requires in the adult about 23 seconds.

KEY TO THE COLOR PLATE

1 R. Superficial Temporal Vein.
2 R. Superficial Temporal Artery.
3 R. External Carotid Artery.
4 R. Internal Carotid Artery.
5 R. External Jugular Vein.
6 L. External Jugular Vein.
7 R. Common Carotid Artery.
8 L. Common Carotid Artery.
9 R. Subclavian Artery.
10 L. Subclavian Artery.
11 R. Subclavian Vein.
12 L. Subclavian Vein.
13-14 R. & L. Cephalic Vein.
15-16 R. & L. Axillary Arteries.
17-18 R. & L. Axillary Veins.
19 R. Innominate Vein.
20 L. Innominate Vein.
21 R. Innominate Artery.
22 Descending Vena Cava.
23 Ascending Aorta.
24 Pulmonary Artery.
25 R. Pulmonary Artery.
26 L. Pulmonary Artery.
27 R. Pulmonary Veins.
28 L. Pulmonary Veins.
29 Heart—R. Auricle.
30 Heart—R. Ventricle.
31 Heart—L. Auricle.
32 Heart—L. Ventricle.
33 Heart—Bicuspid Valve.
34 Heart—Mitral Valve.
35 Ascending Vena Cava.
36 Descending Aorta.
37 Hepatic Veins.
38 Portal Vein.
39 Hepatic Artery.
40-41 R. & L. Renal Veins.
42-43 R. & L. Renal Arteries.
44 R. Kidney.
45 L. Kidney.
46 Stomach.
47 Mesenteric Veins.
48 Mesenteric Arteries.
49-50 R. & L. Common Iliac Veins.
51-52 R. & L. Common Iliac Arteries.
53-54 R. & L. External Iliac Veins.
55-56 R. & L. External Iliac Arteries.
57 Small Intestine.
58 Ascending Colon.
59 Transverse Colon.
60 Descending Colon.
61-62 R. & L. Brachial Arteries.
63-64 R. & L. Basilic Veins.
65-66 R. & L. Radial Arteries.
67-68 R. & L. Ulnar Arteries.
69-70 R. & L. Median Veins.

See HEART; BLOOD; LYMPH; LUNGS; OXYGEN; HARVEY.

Circus, a Roman word meaning circle. The Roman circus was an inclosed race course about five times as long as it was wide. The long sides, and one end which was semicircular in shape, were fitted up with seats rising one above another, like the benches at a ball park, sometimes to the height of three stories. The more pretentious were built of marble at an expense of millions. Pliny states that the Circus Maximus afforded seats for 260,000 spectators. Seats for the emperor and nobility were constructed under an elaborate canopy on one of the long sides. The starter's box was directly opposite. When he dropped the signal, the chariots shot forth from stalls at the square end of the circus and coursed round and round the long ellipse till the race had been decided. A stone wall along the center terminated at each end in a stone pillar which had to be rounded with care. Under Julius Caesar, a canal of water was constructed between the race course and the seats. Rowing matches and swimming contests were introduced by way of variety.

The American circus is sheltered usually under a large tent. As a rule the track is circular, and is devoted to the performances of trick horses and to circus riders. The American traveling circus was established by P. T. Barnum of Connecticut, who popularized it as the "Biggest Show on Earth," which it undoubtedly was. It included not only a circus with a thousand performing horses and a corresponding number of bareback riders, but a large number of tumblers, trapeze performers, rope walkers, a menagerie of wild animals, and an army of 1,200 workmen to erect tents and care for the property. The entire force consists of about 3,000 people. The big tent seats 25,000 spectators. There are now in America several large circuses and a score of smaller ones with regular circuits. The Forepaugh-Sells is a noted combination. Sometimes a large circus breaks up into several to tour the smaller towns. "Circus Day" is the great event in an American boy's memory.

See COLISEUM; MENAGERIE; BARNUM.

Cirrus. See CLOUD.

Cistern, a chamber for storing water. It may be a bin of concrete or masonry underground, and connected with a roof by pipes; or it may be of wood or metal, like a huge hogshead, set up overground. In either case, it is designed to receive rain water and store it for future use. In the Gulf region, where the surface of the soil is but a few feet above surface water, and the ground is sodden with frequent rain, wooden cisterns for rain water are depended upon for a domestic supply. In a hard water country cisterns are constructed sometimes to provide rain water for washing and other domestic purposes. The term is akin to cist or chest. A similar receptacle on a large scale, in connection with waterworks, is called usually a reservoir. The elevated cistern used by railroads or towns is made of heavy plank hooped with iron bands. It is known usually as a water tank and is filled from a well by a pump.

CIRCULATION OF THE BLOOD

Citizen. See NATURALIZATION.

Citron, a form of watermelon. The citron is nearly spherical. It has the stripings and appearance of a small watermelon, but it is nearly solid. The flesh is white, hard, and tasteless. Housewives prepare preserves from sliced citron. The flavor is much like that of preserved watermelon rind.

Citron, a sub-tropical fruit closely related to the lemon. In a broad sense, citron includes the lemon, the lime, and the citron. The term citrus fruit is still broader, including not only the fruits named, but the orange, the kumquat, and the grapefruit or pomelo, as well. The citron tree is cultivated in Greece, Italy, Sicily, Spain, and other countries for the fruit. The foliage differs from that of a lemon tree, and the fruit, though resembling a lemon, is much larger, with a thick, warty, furrowed skin. Of citrons produced in southern Europe, those from Sicily are perhaps the largest, some reaching a length of eight or nine inches and weighing several pounds. Goethe, the great German poet, celebrated his love of Italy and the bright color of the citron in his poem entitled *Mignon*:

Knows't thou the land where the citron blooms?

The thick rind of the citron is used in making preserves. Candied citron is a delicious confection. Citron culture has been introduced sparingly in California and Florida. The tree is more sensitive to frost than either the lemon or the orange. Florida nurserymen propagate the citron by budding on the rough lemon and the sour orange. Cuttings of ripe wood are used also.

City, a town of importance. Among the ancients the city was not clearly distinguished from the state, or rather the city was the state. The cities of Athens, Rome, and Carthage were states. Other cities were either independent states or subject states. According to the ancients, there could be one and only one independent city in a state. The Roman commander in Britain was a citizen, not of the Roman Empire, but of Rome.

A notion quite similar was held by the cities of the Hanseatic League and still persists in the case of the free cities of Bremen and Hamburg. They are really small republics. Bremen has 89 square miles of territory; Hamburg has 158. In English usage, a "city" was originally a cathedral town,—the seat, or "cite," of a bishop. The term was afterward extended in general use to any important town. Modern cities usually have special charters.

In the United States, it is difficult to draw the line between cities and towns or villages. The laws of some states prescribe a minimum population limit for cities of 10,000. In others, there is no limit. Under these circumstances a city may have, it may be, but a thousand, while a neighboring village may have several thousand people. A city is incorporated and is governed by a mayor and a council of aldermen. Of the fourteen cities having a population of a million or more New York and Philadelphia are the nearest together. They are only eighty-eight miles apart.

The cities of the world having a population of over one million at the beginning of the twentieth century were:

London (1919)	7,258,623
New York (1920)	5,621,151
Paris (1910)	2,888,110
Chicago (1920)	2,701,212
Petrograd (1914) est.	2,318,625
Tokio (1916)	2,244,796
Berlin (1919)	1,897,664
Vienna (1920) est.	1,838,700
Philadelphia (1920)	1,823,158
Buenos Ayres (1918)	1,615,216
Moscow (1907)	1,468,563
Osaka (1908)	1,226,590
Calcutta (1911)	1,222,213
Constantinople, est.	1,203,000

City of Brotherly Love. See PHILADELPHIA.

City of Churches. See BROOKLYN.

City of Elms. See NEW HAVEN.

Civet, a small flesh-eating animal intermediate between the cat and the hyena. There are several species peculiar to the Mediterranean region and Malaysia. The mongoose and the ichneumon are members of the civet family. Like its relatives the civet lives chiefly on mice and other small mammals, birds' eggs, lizards, and snakes, and assists in destroying the eggs of the

crocodile. The civet is noted for a pouch of oily fat with a peculiarly penetrating odor used as a perfume. Civets are raised for their oil, a few drops of which may be pressed out at intervals of a week or so. The Abyssinians bring civet to market in small cattle horns. Pure civet oil is worth $10 an ounce in London. See PERFUMERY.

Civil Law. See LAW.

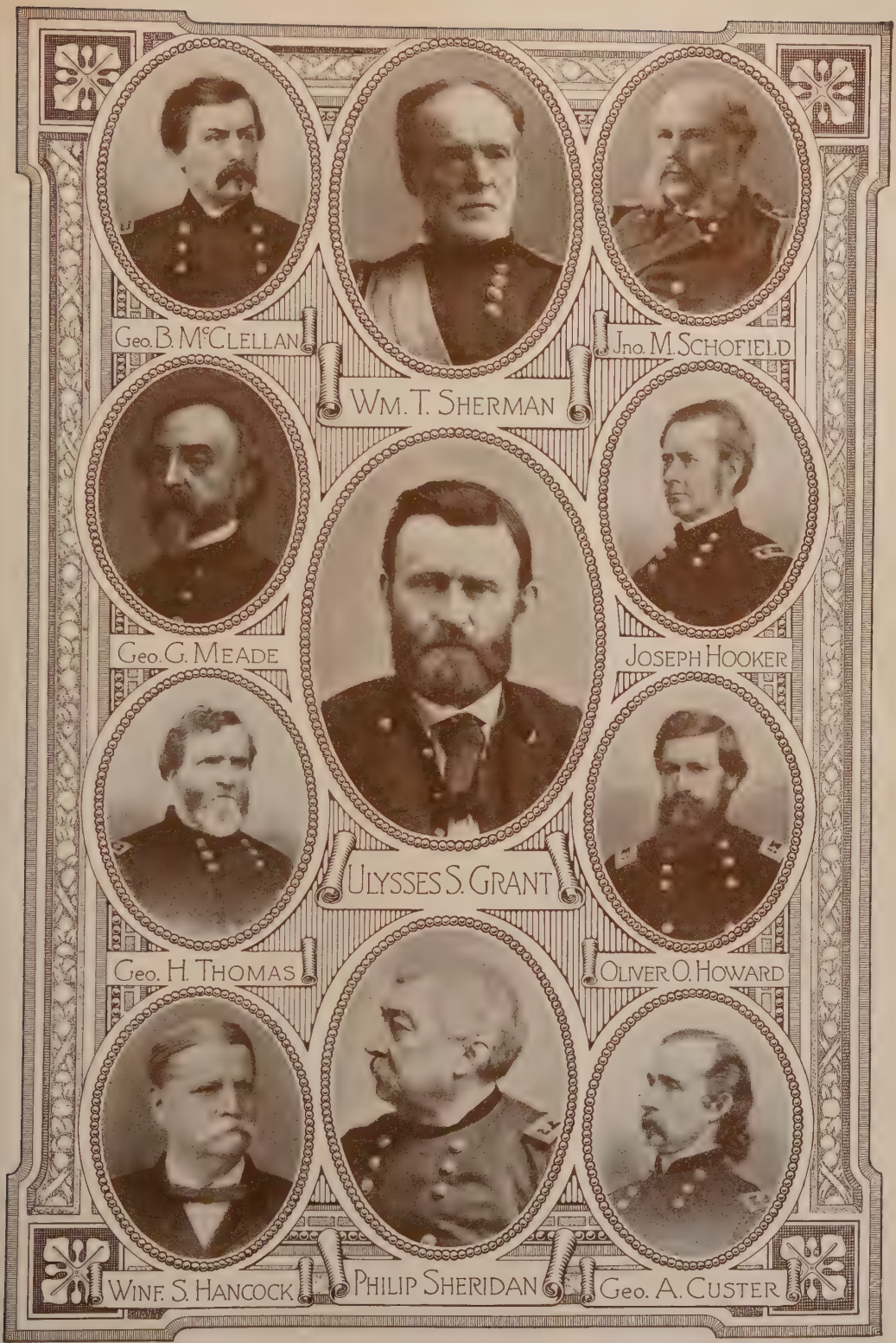
Civil Service, the great body of clerks, secretaries, and other employes required to attend to the business of a government. The civil service does not include the military service or the naval service. In connection with the postoffices, revenue offices, courts, and custom houses, and the departments at Washington, the United States government employs not less than 100,000 persons in a civil capacity. Under the Constitution, all these are to be appointed directly by the president, except as he leaves the matter to the heads of departments. This is the theory of the Constitution. Practically, when of the same party as the president, the congressmen have claimed the privilege of making appointments in their own districts, and the president has yielded so long that the custom has acquired well nigh the force of law. When a district is represented by members of the opposite party it is customary for the president to make appointments at the suggestion of his party leader in that district. When a party goes out of power, its officeholders are likely to be dropped, and members of the successful party appointed to office. Prior to 1829, six presidents made but 112 removals from office, but rotation in office, as described, has been the prevailing method ever since the inauguration of Andrew Jackson. He stood for the principle that "to the victors belong the spoils." It is called the spoils system. It is vicious. It gives a political party a large body of party workers to labor for party success rather than for good government. It has a tendency to fill the offices with those who are active for the party, regardless of personal fitness. It induces young men to join the dominant party for the sake of office. It leads to dishonesty and scandal. This has led to various efforts at "civil service reform."

Though described in the present tense, this vast political machine is partly of the past. In 1883 a bill was signed by President Arthur authorizing the president to establish a classified service to which appointments should be made for merit and during good behavior. Appointments and promotions were to be made on the basis of examinations and fitness, regardless of political or religious belief. This work of examining is placed in the hands of a Civil Service Commission of three members. Every effort is made to ascertain the actual efficiency of the candidates for the various positions. Successive presidents have extended the system until it now covers 80,000 employes, or four-fifths of the entire civil service, and a pay roll of $75,000,000. The higher salaries are not as yet included.

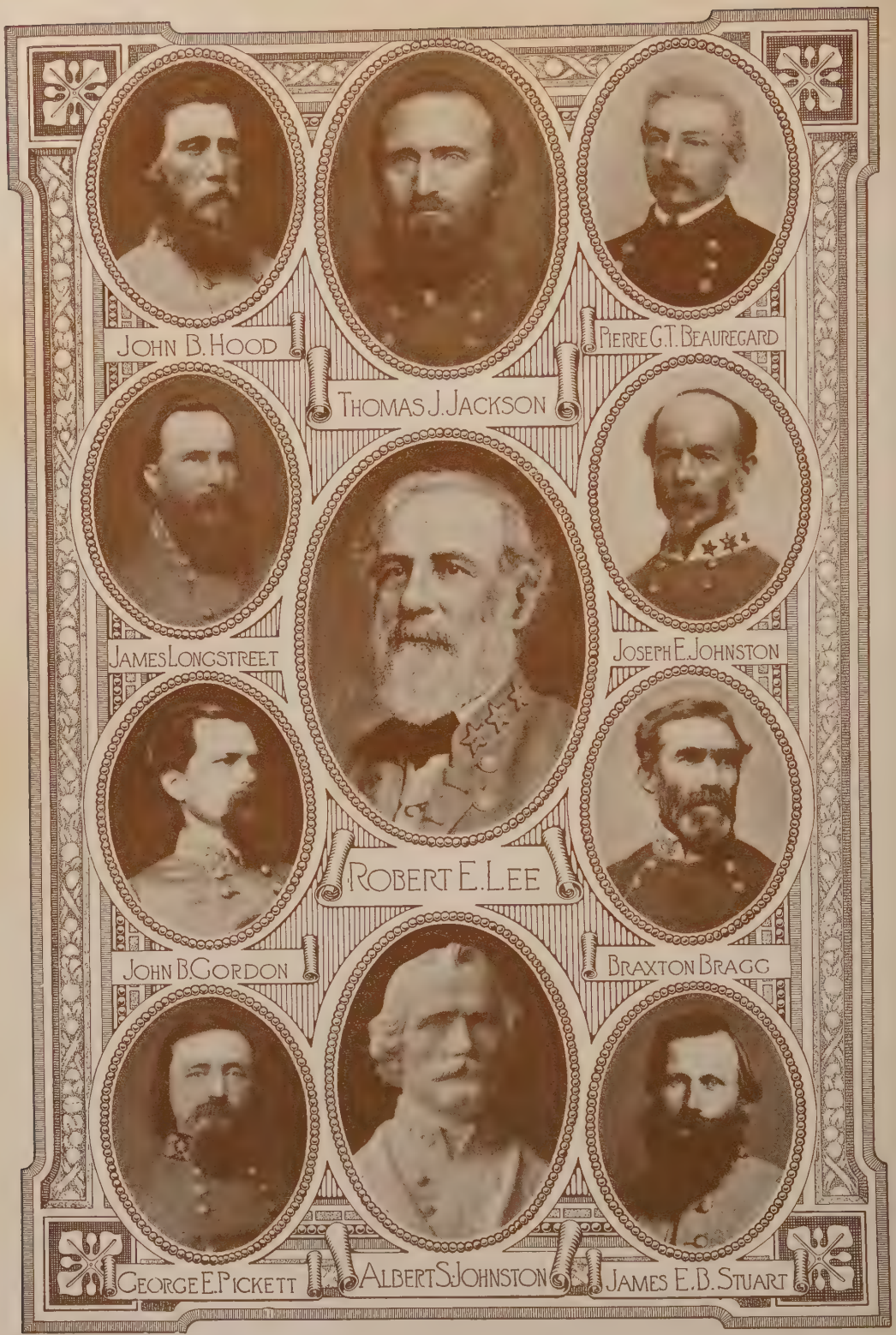
Now that the pressure for appointments has been taken from the congressmen, the tendency to pass acts creating more clerkships has been arrested. It is said that in the ten years succeeding the Civil Service Reform Act the number of clerks actually fell off a little, even in the face of increased work. The one argument urged by practical men against the reform is that appointees, feeling that they are in for life, grow independent and even disobliging.

In spite of drawbacks civil service reform, that is to say, the plan of holding office during efficiency and good behavior, is making reasonable headway. It has been taken up by several of the states and by a number of large cities. Of course the civil service of the states and cities contains a vastly larger body of workers than does the national service described above.

Civil War, The, in American history, a conflict between the northern and the southern sections of the Union. So far as open hostilities are concerned, the war may be said to have begun with the bombardment of Fort Sumter April 12, 1861, and to have closed with the surrender of the Army of West Virginia at Appomattox Court House, April 9, 1865. The eleven states of the South forming the Confederacy had a total population of 8,900,000 of whom 3,500,000 were colored slaves. The



UNION GENERALS



CONFEDERATE GENERALS

Northern, Federal, or Union area had a population of 22,100,000. The Confederacy had about 1,400,000 white men between eighteen and sixty years of age. The Union had 5,000,000 men of military age. The Confederacy enlisted and drafted 1,230,000 different men. An equivalent of 1,080,000 men were under arms for three years. The Union enlisted and drafted 2,500,000 men, and maintained a total service equivalent to 1,560,000 men for three years.

The war was confined almost entirely to the territory of the Confederacy. Slavery was abolished. The doctrine of state sovereignty was overthrown. The North increased in wealth and military strength from year to year. The Union troops laid plantations waste, ran off the stock, and devastated the most fertile valleys of the Confederacy. The South was reduced to dire poverty.

On the Union side 360,000 soldiers died on the field of battle or of disease. The Confederacy lost 258,000. It would not be far out of the way to say that the war cost 1,000,000 lives. The Union paid out $3,660,000,000, and the Confederacy spent about $1,500,000,000, gold values. All in all the conflict, counting the destruction of private property, inflicted a loss of $10,000,000,000, a sum equivalent to one-tenth of our present national wealth.

Clam, a popular name for certain bivalve mollusks. The word is akin to clamp, the two valves of the shell closing in a manner to suggest the jaws of a clamp or vise. The body is soft. The mouth parts are not developed. There is some popular confusion in the use of the term. Western people, in particular, apply the word to the mussel. Clams are found in salt water only. The most obvious difference between a clam and a mussel may be noted in the mantle. This has a thin, fleshy fringe which skirts the edge of the valves and enables the owner, at closing up time, to make a water-tight, even air-tight, joint. In case of the mussel this mantle runs clear around the edge of each valve and forms a continuous flap. The mantle of the clam is rounded out at one end of the shell into a notch, or "sinus," to permit the passage of a long "neck." When the mussel draws in and claps its valves together, nothing can be seen but shell; when the clam shuts up, a round hole at the point of the shell is filled only by the end of the soft neck. The oyster has no foot at all. The mussel has a large foot. The clam is between and has a small foot. It is not much of a traveler. The young stay in the folds of the mother until they are pretty well developed. After they are ejected, they swim about on the surface of the water for a short time. As soon as the shell begins to form the young clam sinks to the bottom and attaches itself to a seaweed, or to a pebble, by a tough, gelatinous thread called a byssus. In case of the long-necked clam this thread disappears when the owner is about one-fifth of an inch long. This clam then burrows permanently in the mud and sand.

The clam of English coasts is called a piddock. It is collected for food and for bait. The young piddock settles on the surface of a clay bed, or soft rock, and scoops itself a hole by means of teeth on the shell. As the piddock grows, it continues to scoop; even at maturity the tip of the shell barely peeps above the surface of the ledge or clay. The piddock spends its life in this hole.

There are two well known clams on our Atlantic coast. One is found from Cape Cod to Texas. New Yorkers call it "a clam." New Englanders, by way of distinction, call it the "round clam" for the shape of the shell, the "hard clam," for its thick, rough shell and the "little neck clam," because the neck is smaller than that of the common New England species. The Indians call it the "quahog." This clam makes shallow burrows, but it may be seen also traveling slowly like a mussel, shell half in the water and half buried in the floor of the sea. A similar species is valued for food on the coasts of France. It is a warm water clam.

The second American clam is found from New York to Greenland. New Yorkers call it the "soft clam," the "long clam," and the "long-necked clam." Yankees call it "the clam," and think there is nothing like a clambake. The long-necked clam

lives on tidal flats. With age, it sinks for protection into a permanent burrow or pocket, perhaps ten inches deep. This clam begins its burrow when young, deepens it as need arises, and stays in for a lifetime. Were he turned out in his old age he would have difficulty in making another. When the tide is in, a long "neck," containing both ends of a U-shaped tube, is thrust up to the opening of the burrow, a current of sea water is driven down one leg of the siphon, through the gills, and up the other leg of the siphon out to the sea. The gills of the clam get what air is required from this stream of water and, at the same time, strain out the minute animals and plants required for food. As is the case with all the clams, the current is propelled in part by the gills. When the tide goes out and the flat becomes bare, the clam draws down his long "neck," and closes his valves until the tide comes in again.

The New York fishermen collect clams by hand at low tide, or collect them from the bottom of the sea with a rake. The New Englander goes out on the flats at low tide and digs clams. Large and small, there are many species of clams. Nearly every coast has its clam. The so-called giant clam may be mentioned. It is a native of the seas of the East Indies. The two valves of the shell may weigh 250 pounds each. The natives of the Caroline Islands use fragments of the sharp-edged shell for axes. The body weighs some twenty pounds and is edible. Curiously enough, the scientific name of this clam, borrowed from the Greek, means three bites.

The clams of the Pacific coast are not considered equal to the "long neck" and the "little neck." Attempts have been made by the government to plant colonies of Atlantic clams on the Pacific coast.

See MUSSEL.

Clan, a tribe of related families having the same name. The word is Gaelic, signifying children, or descendants, and is expressive of a belief that all the members have a common ancestor. The term was used by the large septs into which the Irish were divided, but more particularly by the numerous families in the Cheviots and in the Highlands of Scotland. It is equivalent to the Latin or Greek *gens.*

As our account of the Scotch clans is derived largely from Lowland sources, it is not surprising that these clans are described as so many associations of thieving freebooters who raided the fertile portions of the country, carried off every article they could lay their hands on, and drove the cattle into their mountain pastures. Scott in his *Lady of the Lake* puts the case more fairly. Roderick Dhu speaks:

> These fertile fields, that softened vale,
> Were once the birthright of the Gael;
> The stranger came with iron hand,
> And from our fathers reft the land.
> . . . . . .
> Pent in this fortress of the North,
> Think'st thou we will not sally forth,
> To spoil the spoiler as we may,
> And from the robber rend the prey?
> . . . . . .
> Where live the mountain chiefs who hold,
> That plundering Lowland field and fold
> Is aught but retribution true?

The clans of the Highlands were numerous, theoretically one for each Highland name beginning in Mac, as well as many others—Clan McPherson, Clan MacDougall, Clan MacGregor, Clan Gordon, Clan Alpine, and the rest.

See CELTS; BAGPIPE; MAC; SCOTLAND.

Clarendon (1608-1674), an English earl. Under his proper name of Edward Hyde he was a member of the famous Long Parliament in which he at first supported the popular cause, but apparently becoming afraid of anarchy or of the ruin of the church, he became the leader of the royalists. On the outbreak of hostilities, he took the field for the Stuarts. When Cromwell's dragoons proved too much for the Cavaliers, Clarendon fled to the Isle of Jersey. After Cromwell's death, he arranged with General Monk for the return of Charles II to the throne. He became prime minister and was made Earl of Clarendon. His daughter became the wife of the king's brother, afterwards James II; Mary and Anne, afterwards queens of England, were granddaughters of Clarendon. Later Clarendon, himself an honest, humane man, and a supporter of constitutional government, fell into difficulties with

the licentious, corrupt, and despotic court, and was driven into exile,—a shining illustration of the ingratitude of monarchs. He wrote a "History of the Rebellion from 1641 down to the Restoration of Charles II." It gives the Cavalier side of that period, and is still an authority. Clarendon, the name of the earldom, is derived from a village near Salisbury. It has been adopted by a number of American towns,—one in Arkansas, one in Vermont. An unsuccessful colony at Cape Fear River, North Carolina, was known by the name of Clarendon.

Clarendon Press, the printing office of Oxford University. As early as 1586 Oxford was authorized to publish, a favor not lightly bestowed when authorities were as much afraid of a printing press as they now are of contagion. The Earl of Clarendon gave Oxford the manuscript of his *History of the Rebellion.* The sales were sufficient to defray in part the cost of a new office building, called in his honor the Clarendon. The press became famous for the printing of Bibles and prayer books, as well as for miscellaneous publications. It is now in enlarged quarters and is still one of the great publishing concerns of England. It has a royal monopoly of the right to print the King James Bible, the common version, in Great Britain. Any office may print Bibles, but no other office may print an official Bible. See OXFORD.

Clarionet, klăr'i-o-net', a musical instrument used in orchestras and military bands. It consists of a tube enlarged to bell-shape at one end. The sound is produced by vibration of a single thin reed laid against the mouth piece, one side of which is flattened for this purpose. The tone is varied by keys along the side of the tube and by a series of holes to be stopped with the fingers.

A clarionet can be played in one key only. Different instruments are attuned, therefore, to different keys, those in the key of C and the key of F are the most popular. The clarionet was invented by Joseph Denner of Nuremberg in 1690 but has been much improved since that time.

Clarissa Harlowe. See RICHARDSON; FICTION.

Clark, Alvan (1804-1887), a maker of astronomical instruments. With his son, Alvan G. Clark (1832-1897), he formed the firm of Clark and Son of Cambridge, Massachusetts, known the world over for telescopes of great delicacy and power. The more interesting of their telescopes may be mentioned. One, bearing an object glass with an aperture or diameter of eighteen and one-half inches, is owned by the astronomical society of Chicago. The Naval Observatory at Washington has a twenty-six inch Clark telescope. Cyrus McCormick, the maker of reapers, gave a large Clark to the University of Virginia. A thirty-inch instrument was made for the Imperial Observatory at St. Petersburg; a thirty-six inch for the Lick Observatory at Mount Hamilton, California, and lastly a forty-inch object glass was ordered by C. T. Yerkes for the University of Chicago Observatory at Lake Geneva, Wisconsin. The Yerkes lens is the most powerful in existence. It brings the moon within an apparent distance of a few miles from the observer. It requires the purest of glass and the work of years to bring one of these lenses to perfection. The finish is so delicate and so perfect that a single careless touch with the end of one's finger would ruin the surface and render the glass useful only for a smaller lens.

Clark, Champ (1850-1921), an American statesman born in Anderson Co., Ky. His real name was James Beauchamp Clark. He was educated in the common schools, in Kentucky University, Bethany College, and the Cincinnati Law School. In 1873 and 1874 he acted as president of Marshall College, West Virginia, then removed to Bowling Green, Missouri, where he has lived since 1880. He took up the practice of law, and was soon elected city attorney, then county attorney, and afterward to the state legislature. In 1892 he was elected to Congress as a free-trade Democrat, and with the exception of one term has since served continuously, being chosen speaker of the House in 1911. He led on over thirty ballots for president in the Democratic National Convention of 1912.

Clark, George Rogers (1752-1818), an American soldier and pioneer. He was a native of Virginia. In 1775 he settled in Kentucky. At the outbreak of the Revolution he was a leader in the midst of the Indian warfare waged in the Ohio Valley. He defended Harrodsburg against the combined attack of British and Indians. In 1778-9 he led a force of Kentucky riflemen across the Ohio to the capture of Kaskaskia on the Mississippi. From this post he marched eastward to surprise the British at Fort Vincennes on the Wabash. This cross country march of a small force, floundering through deep snow or wading waist deep in icy water to attack a superior foe intrenched in comfort, is one of the most notable, as well as successful, expeditions on record. At the conclusion of peace it gave the United States a title to the Mississippi Valley by virtue of conquest and occupancy. In his latter days, as is too often the case, Clark's services were forgotten. He became a drunkard, fell into want, and died near Louisville in utter neglect. Good portraits are given in Churchill's *The Crossing,* Thompson's *Alice of Old Vincennes,* and Roosevelt's *Winning of the West.*

Clark, William (1770-1838), an American explorer. A brother of George Rogers Clark. He migrated from Virginia to the present site of Louisville, Kentucky. In 1808, he was appointed to the joint command of the Lewis and Clark expedition, sent by Jefferson to explore the upper waters of the Missouri, and the great Northwest. Clark's journal of the trip from St. Louis through the mountains to the mouth of the Columbia River in Oregon is full of thrilling anecdotes. It is better reading than any story of Indian adventure. He died at St. Louis. See LEWIS.

Clark University, an institution of higher learning at Worcester, Massachusetts. It was founded in 1887 by Jonas Gilman Clark for the purpose of offering to graduate students, educators, and specialists opportunity for study and original research. The original endowment was $1,000,000, a sum insufficient to equip courses in all subjects. Those offered were physics, chemistry, biology, psychology, and education. After Mr. Clark's death in 1900 it was found that by the terms of his will the University was further endowed with $2,500,000. Courses were then equipped in mathematics, economics, sociology, history, and modern languages, and an undergraduate department was added.

That the opportunities offered by this institution have been appreciated may be gathered from the fact that within ten years of the founding of the University its students and graduates had published no less than 500 works, presenting to a greater or less extent the results of their researches. A great deal of the prestige to which this institution has attained is due to the noted educator at its head, G. Stanley Hall.

In 1910 Clark University had a library of 50,000 volumes, there were 34 instructors and 282 students. *The American Journal of Psychology, The Pedagogical Seminary,* and *The Mathematical Review,* are periodicals published by the University.

Clarke, James Freeman (1810-1888), an American Unitarian clergyman and miscellaneous author. He was born at Hanover, New Hampshire. He was educated at Harvard University, and his first pastorate was at Louisville, Kentucky. In 1841 he removed to Boston and founded the *Church of the Disciples* of which he was pastor until his death. Mr. Clarke was a friend of Channing, Holmes, and Emerson, and sympathised with the views of the Transcendentalists. He was a clear thinker—a leader in literary and educational movements. His best known writings are *Ten Great Religions, Every-Day Religion, Orthodoxy, Its Truths and Errors, Christian Doctrine of Forgiveness, Essentials and Non-Essentials in Religion.*

Let us thank God for books. When I consider what some books have done for the world, and what they are doing; how they keep up our hope, awaken new courage and faith, soothe pain, give an ideal life to those whose homes are hard and cold, bind together distant ages and foreign lands, create new worlds of beauty, bring down truths from heaven,—I give eternal blessings for the gift, and pray that we may use it aright, and abuse it not.—J. Freeman Clarke.

Claxton, Philander Priestley (1862-), an American educator. He was born in

Tennessee. After completing a course of study at the university of his native state and filling the position of superintendent of schools at Kingston, North Carolina, for a year, he studied at Johns Hopkins University and spent a year of study in Germany. He was superintendent of schools successively in the North Carolina cities of Wilson and Asheville, and in 1893 was made professor of pedagogy in the North Carolina State Normal and Industrial College. In 1902 he was made professor of education in the University of Tennessee, and four years later professor of secondary education and inspection of high schools in the same institution. Mr. Claxton is the author of many addresses and magazine articles on educational subjects, and has occupied many positions of importance in various educational organizations. He edited at different periods the *North Carolina Journal of Education*, and the *Atlantic Educational Journal*. He has served as a member of the Council of the National Educational Association of America, and as chairman of the executive committee of the National Story Tellers' League. In 1911, Mr. Claxton was appointed United States Commissioner of Education and held the position until 1921.

Clay, a kind of earth originating chiefly from the decomposition of feldspar, and consisting largely of alumina, silica, and water, together with various impurities. Clay is traditionally yellow. The term "claybank" is applied to a horse of that color, but clays are often red from infusion of iron and, indeed, may be of almost any color. A pure clay is white. The war paints of the American Indian were merely clays of various colors. Fine clay, free from sand or grit, is the potter's material out of which crockery is made, and ordinary clay is the earth used for tiles and brick. Pipe clay is a fine clay, free from iron and other impurities, suitable for fine pottery and tobacco pipes. The annual money value of clay products far exceeds the output of gold mines. Wheat and all members of the pea family, particularly the clovers, thrive in a clay soil. Some idea of the value of clay from an agricultural point of view may be had from the following statement. Estimating the yield of wheat at twenty bushels to the acre, the following table shows the number of crops of wheat for which the various elements entering into the composition of clay are sufficient:

Element.	Crops.
Potash	226
Magnesia	4164
Lime	2260
Phosphoric acid	420
Sulphuric acid	216
Nitrogen	157

See BRICK; POTTERY; KAOLIN; MEERSCHAUM; ADOBE.

Clay, Henry (April 12, 1777-June 29, 1852), an American statesman. He was a native of Virginia. His parents lived in a swampy place, such as in Virginia is called a slash. He studied law and settled in Kentucky and was sent to the state legislature. He was in public office for over forty years. During campaigns he was called the "Mill Boy of the Slashes."

Twice he sat in the legislature of Kentucky. He represented his district three times in the United States House of Representatives, and each time he was made its speaker. He was elected to the United States Senate four times. In politics he was a Whig. Three times he was the candidate of that party for the presidency. He was defeated three times at the polls. The first time, by Adams, the second, by Jackson, and the third time, by Polk. During the second of these campaigns Clay's supporters carried ash poles in memory of Ashland. Jackson men carried hickory poles in honor of Old Hickory. The Jackson men sang:

> Alas! poor Cooney Clay!
> Alas! poor Cooney Clay!
> You never can be president,
> For so the people say.

Under Madison, Clay was one of the envoys to negotiate the treaty of peace in 1814; under Adams he was secretary of state. Whether on the floor of the House or the Senate, or whether he acted in some other capacity, he led his party for forty years. His admirers called him the Great Commoner—the appellation of William Pitt. He was recognized as the peer of Daniel Webster and John C. Calhoun.

As to his position on public questions, he forced on the war of 1812; he stood for a protective tariff; he drew up the compromise tariff bill to appease Calhoun and South Carolina; he carried the Missouri Compromise; he stood the staunch friend of the South American republics in their struggles with Spain; he freed his own slaves, and he drew up the famous compromise bill of 1850, known as the Omnibus Bill, because it provided for so many different measures. The chief provisions were,—the admission of California to the Union, organization of the territories of New Mexico and Utah, abolition of the slave trade in the District of Columbia, and the fugitive slave law. He advocated the plan of purchasing all slave children and setting them free. The proposed measure would have cost but a fraction of the $10,000,000,000 actually spent and destroyed by the Civil War.

Toward the end of his career Clay became very much unsettled. He tried to compromise the difficulties between the North and South, but foresaw that the Union was drifting into peril.

Of the three great names associated, Calhoun surpassed in intellect and in the integrity of his convictions; Webster excelled in the extent of his literary acquirements and in oratory; Clay possessed in the higher degree the elements of popular leadership and personal influence. Kentucky erected a monument to his memory.

Clayton-Bulwer Treaty, a treaty concluded between the United States and Great Britain in 1850. Its purpose was to facilitate the construction of a ship canal across Central America. The negotiators, from whom the treaty takes its name, were J. Middleton Clayton, Secretary of State under President Taylor, for the United States, and Lord Henry Bulwer for Great Britain. By the terms of the treaty, the two powers guaranteed the protection and neutrality of the canal, and agreed that neither power should ever "occupy, or fortify, or colonize Nicaragua or any part of Central America." It was understood that these stipulations did not apply to British Honduras. Many disputes arose due to conflicting interpretations of the treaty and to dissatisfaction arising from changing conditions. In 1881 the claim was made by the United States that the treaty had become obsolete, but Great Britain declared it to be still in force. The statement in President McKinley's message of 1898, that the canal had become a national necessity led to the reopening of negotiations, with the result that in 1901 a new treaty was ratified, John Hay, secretary of state, and Lord Pauncefote acting as negotiators. By the Hay-Pauncefote treaty the Clayton-Bulwer treaty was abrogated. The principle of neutrality was retained, but certain rights of control not very clearly defined were granted the United States. Great Britain renounced any right to join in the construction and control of the canal but no prohibition was made concerning the erection of fortifications.

Clearing House, a central office where representatives of different banks meet to exchange checks and drafts. At the close of a day's business each bank in a city finds that it holds checks upon the other banks for various amounts. Where there are but a few banks, a clerk goes out the next morning and presents these checks, but in cities with many banks the clerks meet as stated at a given hour, usually 9 A. M. A few minutes are quite sufficient to do the work that would otherwise require travel and expenditure of valuable time. In large clearing houses a desk is provided for each bank holding membership, also a central desk for a manager. Each bank is represented by two clerks. One takes a seat at the desk, the other passes around the circle delivering the bundles of checks which he holds against the various banks. A deposit slip or statement is delivered with each bundle of checks, and a general statement is handed to the manager. If a bank receives checks in excess of its total deposits, it pays the manager the balance in cash. If a bank deposits checks exceeding in value those received, it receives the balance in cash. If the accounts be correct, the manager receives precisely as much cash as he pays out. Fines are imposed for tardiness and inaccuracy.

In the New York clearing house, consisting of sixty or more members, forty-five minutes are allowed for the settlement of business that would otherwise require the time of many messengers and the transportation of enormous quantities of money with attendant risks and expenses.

The manager of the New York clearing house, stated in the *Americana* some time ago, that the daily clearings of the various cities of the United States, if made by messengers with coin, would require the transportation of 700 tons of the precious metals daily; while under the present system less than five per cent of the daily exchanges are settled in money. The system originated, it is claimed, in Edinburgh near the close of the eighteenth century. The earliest authentic records date from 1770 when the London bank clerks arranged for a meeting in an informal way at a central room to exchange deposits and pay balances. It is everywhere customary for the smaller banks, and country banks not members of the clearing house association, to make their deposits with banking members. American clearings for 101 cities in 1918 were $321,461,327,000. The Canadian clearings for the same year were more than $12,000,000,000.

The following table, compiled by *The American Banker,* shows the volume of business done in the clearing houses of the principal cities of the United States for 1918. It shows New York to be the financial metropolis of the nation; Boston, of New England; Chicago, of the Middle West; and San Francisco, of the Pacific States.

Boston	$7,338,035,825
Fall River	50,797,024
Hartford	166,906,324
Lowell	24,180,450
New Bedford	40,876,795
New Haven	123,102.818
Portland, Me	91,908,653
Providence	337,480,000
Springfield, Mass.	92,490,212
Worcester	76,189,380
Total New England	$8,341,967,481
Albany	$278,976,213
Baltimore	1,240,904,390
Binghamton	23,836,900
Buffalo	409,086,589
Chester	23,560,542
Greensburg	25,919,663
New York	79,275,880,256
Philadelphia	5,987,754,106
Pittsburg	2,064,632,959
Rochester	175,959,356
Syracuse	102,893,851
Washington	278,079,235
Wheeling	72,000,600
Wilmington, Del	61,727,836
Total Eastern States	$91,021,312,496
Atlanta	$230,067,592
Augusta	83,838,140
Birmingham	93,945,498
Chattanooga	69,766,032
Fort Worth	508,491,520
Galveston	682,902,000
Houston	1,063,835,612
Jacksonville, Fla.	73,194,127
Knoxville	71,654,489
Lexington	32,354,298
Little Rock	71,022,889
Louisville	579,863,327
Macon	36,237,094
Memphis	252,991,081
Nashville	153,675,903
New Orleans	786,097,353
Norfolk	111,079,245
Richmond	298,532,561
Savannah	194,180,377
Vicksburg	18,406,580
Total Southern States	$5,412,104,718
Akron	$30,629,250
Bloomington	24,784,426
Canton	25,721,069
Chicago	11,853,814,943
Cincinnati	1,230,180,300
Cleveland	749,846,709
Columbus	253,756,600
Davenport	55,520,161
Dayton	81,235,277
Des Moines	147,746,846
Detroit	668,047,524
Evansville	93,965,445
Grand Rapids	106,803,257
Indianapolis	380,372,084
Jacksonville, Ill.	12,937,920
Kalamazoo	50,520,060
Milwaukee	547,569,294
Minneapolis	1,057,468,860
Peoria	134,689,657
Quincy	25,696,053
Rockford	30,576,274
Sioux City	113,472,005
Sioux Falls	29,251,108
Springfield, Ill.	43,082,990
Springfield, Ohio	20,125,550
St. Joseph	259,340,258
St. Louis	3,165,619,327
St. Paul	483,976,978
Toledo	180,169,933
Youngstown	34,791,423
Total Middle States	$21,891,711,581

Colorado Springs	$33,593,494
Denver	409,996,642
Fargo	30,894,939
Fremont	16,792,953
Kansas City	1,848,511,393
Omaha	602,525,867
Topeka	55,870,990
Wichita	72,948,070
Total Western States	$3,071,134,348
Helena	$41,300,978
Los Angeles	505,588,756
Oklahoma City	52,635,058
Portland, Ore.	310,656,513
Salt Lake City	257,033,974
San Francisco	1,757,151,850
Seattle	429,499,251
Spokane	307,791,482
Tacoma	218,058,600
Total Pacific States	$3,879,716,462

Clematis, a genus of the buttercup family. There are over one hundred fifty species; about twenty in North America. The wild species are chiefly copsewood climbers with inconspicuous, greenish flowers and long-tailed, cottony fruit; or else they are low, erect, few-flowered herbs with bell-shaped purple sepals. The best known species is the common virgin's bower. The latter and the cultivated species are fine trellis climbers. Blue, white, purple, and rose colored, they offer fine shade and masses of rich color. See BUTTERCUP.

Clemenceau, Eugene (1841-), a French political leader and journalist. He studied medicine at Paris, began to practice, but was drawn into local politics. When the Franco-Prussian War came on he found himself a leader of the radical party and mayor of the Montmartre section of the city. In 1876 he became the leader of the radical Republicans in the Chamber of Deputies. Clemenceau was in position more than once to head the French ministry, but as often refused, preferring to be on the offensive rather than the defensive. He suffered severely in reputation on account of the De Lesseps-Panama scandals, and failed of reëlection. He is known best perhaps as the editor of *La Justice,* the organ of the radical party.

In 1902 he was elected to the Senate, and in 1906 he became minister of the interior and premier of France. He was the strongest prime minister that had ever held office. In policy, he was strongly national, and opposed both to clericalism and socialism. In the "Revolt of the Midi," the wine growers of France, he put down the agitators with a strong hand; and though subjected to much criticism, he received a strong vote of confidence in the Chamber. Cleménceau is popularly known as "The Tiger." He is powerful as a debater. In June, 1917, he was again called to be premier of France and in 1918 was one of the foremost members of the Peace Conference, there justifying the appellation of tiger by the way he guarded the rights of France. He is the author of several interesting works.

Clemens, Samuel Langhorne (1835-1910), an American humorist. He is known more generally as Mark Twain, a name he is said to have picked up on a Mississippi steamboat, through hearing the sounder announce the depth of the water at the bow. He was born at Florida, Missouri. His education was somewhat less than that of an ordinary district school. He learned to set type in a local town, and later worked at the printer's trade in Philadelphia, New York, and elsewhere. He took to steamboating and became a pilot. On the appointment of a brother to the secretaryship of Nevada Territory, Samuel was appointed to a clerical position. He tried his fortune in silver mining, became local editor of a newspaper in Virginia City, and later turned up in San Francisco, where he worked as a reporter. For a time he prospected in the Calaveras gold field; then worked again in San Francisco. Not satisfied with this varied experience, he went as far westward as the Sandwich Islands, and on his return took a trip to the Mediterranean regions. After editing a newspaper in Buffalo for a time, he married Olivia Langdon of Elmira, New York, and settled in Hartford, Connecticut. He died in 1910 at Reading, Connecticut.

Mr. Clemens was laid at rest in the family burial plot at Elmira beside his wife over whose remains he had previously erected a simple marble stone, bearing this epitaph:

Warm summer sun,
Shine kindly here;
Warm southern wind,
Blow softly here.

Green sky above,
Lie light, lie light;
Good night, dear heart;
Good night, good night.

Like Sir Walter Scott, Mr. Clemens had experience in publishing. In 1884 he founded the publishing firm of Charles L. Webster and Company. During the financial depression of 1894, the firm failed. This disaster swept away the author's fortune, and left him in debt to the extent of $100,000. This he paid in full and died a wealthy man.

Nearly all his books were published by subscription. Nearly 1,000,000 copies were sold in this way. Most of his works have been translated into German, French, Italian, Norwegian, Danish, and other tongues. As many copies of his books have been sold in Great Britain as in America.

Named in order of appearance, his principal works are *The Jumping Frog, The Innocents Abroad, Roughing It, Adventures of Tom Sawyer, A Tramp Abroad, Life on the Mississippi, Huckleberry Finn.* The twenty-five volume set of Mark Twain's works advertised by Harper & Brothers in 1909 includes the following titles:

The Innocents Abroad.
A Tramp Abroad.
Following the Equator.
Roughing It.
Life on the Mississippi.
The Gilded Age.
The Adventures of Tom Sawyer.
Huckleberry Finn.
Pudd'nhead Wilson.
The Prince and the Pauper.
A Connecticut Yankee in King Arthur's Court.
Joan of Arc.
Sketches New and Old.
Tom Sawyer Abroad.
American Claimant.
Literary Essays.
The Man that Corrupted Hadleyburg.
The $30,000 Bequest.
Christian Science.

Mark Twain takes high rank among American humorists. He possessed something more, too, than the ability of a mere fun-maker. He was a close observer of men and an effective interpreter of what he had observed. His writings, however, are marked by a striking inequality. "His books contain much that is flat, stale, and unprofitable," Bronson says, and this is true, though hardly more than should be anticipated from one who writes so prolifically and is always expected to create a laugh. In 1920 his name was placed in the Hall of Fame.

Mark Twain originally of Missouri, then provisionally of Hartford, and now ultimately of the Solar System, not to say the Universe.—Howells.

Time will winnow much chaff from his pages, but much of great merit will remain.—Bronson.

No American author has at his command a style more nervous, more varied, more flexible, or more direct than Mark Twain.—Brander Matthews.

Clement V, Pope from 1305-1314. At the instance of the French monarch, he suppressed the order of the Templars and removed the seat of the papacy to Avignon.

Clement XIII, Pope from 1758-1769. He supported the Jesuits against the demands of France, Spain, and Portugal for their suppression.

Clement XIV, Pope from 1769-1774. He was elected by anti-Jesuit influences and carried out the desired policy. Twenty-four thousand Jesuits and their missions all over the world were disbanded by order of Clement in 1773, nor was the order rehabilitated until 1814.

Cleopatra, kleo-pā'tra (99-30 B. C.). A queen of Egypt. The last of the Ptolemies. She was a handsome, profligate, artful woman. Many tales are told of her beauty, of her extravagance, and of her faithlessness, but none, of her good qualities. Her capital was Alexandria. Her kingdom was one of the fragments of the empire of Alexander. It lay, as she well knew, at the mercy of Rome. She murdered her husband that she might be free to intrigue. By personal influence she secured the good will of Rome during the rule of Julius Caesar, who received her at Rome with great magnificence and to whom she bore a son called Caesarion. After the assassination of Caesar, Antony—the same Mark Antony who made the celebrated speech over Caesar's dead body—visited her at Alexandria and fell

into her snares. He forsook his Roman wife and lived chiefly at Alexandria the rest of his days, heaping wealth and honors on Cleopatra. Augustus decided to dissolve partnership with Antony and to overthrow him. This he did in a naval battle at Actium, during which Cleopatra fled home with her sixty ships. Antony followed and committed suicide by falling on his sword. Cleopatra tried to make peace with Augustus as she had with Caesar and with Antony. Finding that she was making no headway, and that Augustus designed to carry her home and have her walk in his triumphal procession through the streets of Rome, she caused a slave to bring her a basket of fruit in which a poisonous asp was concealed. Preferring death to humiliation, she thrust in her bare arm, so runs the story, and received a mortal bite. Conscience she had none; but her pride was unbounded. Thus perished the last of the Ptolemies. Egypt became thenceforth a Roman province. See ANTONY; ALEXANDRIA.

If Cleopatra's death had been caused by any serpent, the small viper would rather have been chosen than the large asp; but the story is disproved by her having decked herself in "the royal ornaments," and being found dead "without any mark of suspicion of poison on her body." Death from a serpent's bite could not have been mistaken; and her vanity would not have allowed her to choose one which would have disfigured her in so frightful a manner. Other poisons are well understood and easy of access, and no boy would have ventured to carry an asp in a basket of figs, some of which he even offered to the guards as he passed; and Plutarch shows that the story of the asp was doubted. Nor is the statue carried in Augustus' triumph which had an asp upon it any proof of his belief in it, since that snake was the emblem of Egyptian royalty; the statue (or the crown) of Cleopatra could not have been without one, and this was probably the origin of the whole story.—Rawlinson.

Cleopatra's Needles, two Egyptian obelisks or monumental stones of rose red granite. They were erected originally by an Egyptian king in front of the portico of a great temple to the sun which stood on the banks of the Nile at Heliopolis, near the birthplace of Moses. Before the Christian era and during the Roman occupancy of Egypt, but not in the reign of Cleopatra, the obelisks were brought down the Nile and set up at Alexandria, where they fell over in the sand and were neglected for centuries. In 1878 one of them was brought to London and set up on the Thames embankment. The other was given a place of honor in Central Park, New York City. They are nearly of a size. Each is composed of a single block of granite. Both are four-sided and taper upward. The Central Park obelisk measures 7 feet 9¾ inches by 8 feet 2¼ inches at the base, and is 67 feet 2 inches in height. The four surfaces are inscribed with hieroglyphs cut to a depth of several inches and carefully polished. The top is a short, four-sided pyramid, on each side of which is cut a bas-relief representing the sun god of the ancient city of Heliopolis. In the rainless, warm climate of Egypt, the obelisks remained for centuries as fresh as when they first came from the quarry and chisel of the ancient Egyptians; but the rain and frost of Central Park have caused a certain amount of chipping and peeling which the authorities have tried to prevent by applying a coating of oil at frequent intervals. See CENTRAL PARK; ALEXANDRIA; OBELISK.

Clepsydra, klĕp′sĭ-drȧ, a contrivance for measuring time by the flow of water through an orifice. This is an ancient timepiece said to have been in use 2000 B. C. In its simplest form it is a hollow cylinder with an orifice in the bottom of such size that the water runs out in a certain number of hours. The descent of water in the tube or tank indicates the hour of the day or night. In its later forms it was furnished with a dial like that of a clock, the hands of which were operated by clockwork set in motion by means of weights and regulated by a float of wood or cork riding on the sinking surface of the water. Sometimes mercury was used instead of water. The clepsydra was superseded by the invention of the pendulum. See HOURGLASS; CLOCK.

Cleveland, a lake port of northern Ohio. It is situated on a level beach, on both sides of the Cuyahoga River, 115 feet above the surface of Lake Erie. The mouth of the river has been dredged and affords a

capacious harbor, having several miles of wharfage. Its area is enlarged and protected by an immense outlying breakwater or dyke of masonry, constructed by the general government at an expense of $8,000,000. The valley of the river is filled with warehouses, depots, coal sheds, and grimy factories. The two parts of the city are united by two enormous overhead viaducts or elevated roadways that pass from bluff to bluff across the valley.

The city is the metropolis of the Western Reserve. It was named for General Moses Cleaveland, its founder. It was intended originally to be the capital of a state to be called New Connecticut. It was laid out 1796. The first library was started in 1811; the first bank in 1816; the first newspaper in 1818; in 1824 the first steamer was launched from its shipyard; in 1828 the bar was cut away from the entrance to the river; in 1851 the first railroad was built.

The growth of the city is due to its manufactures and commerce. Iron ores from Minnesota and Pennsylvania, and coal from Ohio, make Cleveland one of the great iron manufacturing cities of the Union. It leads in nails and wire, and is second in hardware. The most important shipyards on the Great Lakes are here. The foundry and machine shop products are rated at nearly $50,000,000 a year. The bulk of the bolts, rivets, nuts, and washers sold in a western hardware store are made here. Next to iron work, come meat-packing, clothing, beer, petroleum and paint.

The Ohio Canal terminates at Cleveland and brings in a large amount of coal and agricultural products. Counting iron and copper, Cleveland is the greatest ore market in the world. Western grain goes largely to Buffalo. Western ore is marketed chiefly at Cleveland. It is a great market for petroleum and lumber. About fifty lines of lake steamers make the city their headquarters.

Cleveland has been noted from the first for the intelligence and taste of its inhabitants. An excellent system of public elementary and high schools is reinforced by the Western Reserve University and the Case School of Applied Science. A public library contains 350,000 volumes. The various college libraries have as many more. The population in 1920 was 796,836.

See GARFIELD; WESTERN RESERVE; ERIE.

Cleveland, Grover (1837-1908), the twenty-second president of the United States. He was born March 18, 1837, at Caldwell, New Jersey. His father was a Presbyterian minister. Cleveland was well prepared in classics and mathematics, but did not enter college. He taught for a time and studied law. He was admitted to the bar in 1859. He opened an office in Buffalo, New York. He was known as an able, fearless lawyer. He was a Democrat in politics. In 1863 he was appointed district attorney of Erie County, in which Buffalo is situated. In 1870 he was elected sheriff. In 1881 he was elected mayor. He made a reputation in that office. In 1882 he was nominated for governor by the Democrats of New York, and was elected by the unprecedented majority of 200,000 votes. A reputation for uprightness in office, and an ability to carry New York, made him the nominee of the Democratic party for the presidency in 1884. He was elected over James G. Blaine by an electoral majority of thirty-seven. Cleveland was the first Democratic president since the day of James Buchanan. Cleveland was defeated for the presidency by Benjamin Harrison in 1888; yet in 1892 he was again nominated and defeated Harrison.

During his presidential terms Cleveland made a reputation by vetoing more measures than all his predecessors put together. Many of these were pension measures, well enough in themselves, but not matters for Congressional attention, in Cleveland's opinion. He thought that these cases should be allowed to take their regular routine course in the department of pensions. He proposed an income tax. He was known abroad as a vigorous supporter of the Monroe Doctrine. He has been criticised for the use of Federal troops in clearing the way for the United States mail during the labor strike in Chicago. He held he was discharging a duty of his office.

President Cleveland was married during his first term of office. On retiring from the presidency, he took up his residence at Princeton, New Jersey. He wrote a number of articles for various periodicals, lectured in the college, and spoke repeatedly on public occasions. He was, however, a man of ample means. He preferred to lead an independent life. He had a reputation of being fond of fishing and of hunting. It is too early to form an estimate of President Cleveland's public services, but it is safe to say that he ranks among the upper third of American presidents. He died June 24, 1908.

See PRESIDENT.

Cliff Dwellers, an Indian tribe formerly dwelling in the cliffs bordering the cañons of the Rio Grande and the Colorado. The dwellings were excavated in the cliffs, and consisted often of several rooms with doorways and windows having wooden sills. It is thought that the openings were closed by hangings of the skins of wild animals. The interior was neatly plastered with native clay, suitable for the purpose. Often the outer wall was built of stonework laid in clay, or of adobe. These dwellings were made usually high up in the face of a cliff, sometimes 300 feet. Many are now inaccessible, owing to the crumbling away of the ledges along which the builders made their way. As the country is quite rocky and barren, the inhabitants must have depended on the river valley for hunting and fishing. These ancient Indians understood irrigation. They raised corn, beans, watermelons, cotton, and tobacco. They domesticated the turkey. Some explorers claim to have found traces of the Andean llama. The arts of weaving and of making pottery were understood. Their weapons and tools were of bone or flint. Metals, save copper ornaments, were seemingly unknown. Judging from the ruins, some of the communities must have comprised at least 1,000 persons. One of these old strongholds contained 127 apartments. For some account of their supposed descendants, see PUEBLOS.

In scores of such canyons we explored the ruins of structures made by some ancient race, more ancient than any others which have left traces of their existence in America. There we found stone axes and spear heads, cords made from fiber of the oose plant, pieces of feathered funeral robes, sandals skilfully woven of fiber, long pieces of beautifully twisted black thread, strong and lustrous as silk; bone needles and awls; but never a bit of metal of any description. Pieces of well decorated pottery are strewn everywhere. Many of the walls are covered with hieroglyphics, most of them rude and intended to convey simple thoughts, although sometimes they appear to have been sketched by a master hand and to have a more complicated meaning. They seem to have been brief epitaphs, showing the exploits of those who are sepulchered among the near-by ledges. Some of the ruins are easy of access, while others can only be entered with great toil, and by the use of rope ladders. One of the largest in White Canyon is supplied with the remains of an ancient ladder. Above this, steps have been cut out in the rock, and a stairway of crumbling cedar affords a dangerous but possible means of ascent. This lofty cave is well fortified, and contains a number of apartments, pottery kilns, and storehouses. Here, as in other places, the walls show many handprints stained with red, brown, and white pigments, as though the inhabitants had proclaimed their titles to the places by setting their hand and seal upon them.—H. L. A. Culmer, in *Technical World Magazine.*

Climate, the characteristic condition of a country with reference to heat, moisture, wind, and healthfulness. If a region be studied, it will be found that while the winters may differ greatly from year to year, average conditions are much the same. One day may be clear, another cloudy; yet the rainfall in the Mohawk Valley for any series of ten years is much the same. One day may be hot, the next cool; yet the average temperature of New Orleans from year to year varies little. The same is true of winds. One day may be windy, the next calm; yet a region subject to south winds will have much the same amount of south wind from year to year. The rainy winds of India do not blow from the south for a series of years, then turn around and blow from the north for a few years. Weather is very changeable; climate varies little.

Latitude is the chief factor that affects climate. Our heat is derived from the sun. The nearer the equator, the more vertical are the sun's rays. Within the tropics a bundle of rays spreads over less than half the surface that it covers within

the polar circles. The poles are about 4,000 miles farther from the sun than is the equator; but the sun is so far from the earth that this slight difference in distance has no practical effect. The coldness of the Arctic regions is due to the fact that an acre of ground receives only half as much heat as an acre in the torrid zone.

Altitude, or height above the sea level, is another important factor. The earth's atmosphere, that is to say, the air, allows the heat of the sun to pass through it freely to the earth's surface, but acts like a blanket, preventing the escape of the radiated heat; that is to say, heat coming from the sun comes through the air readily, but is so changed by radiation on turning back from the earth that it cannot escape through the air readily. The higher one ascends above the sea level the less dense the air. High plateaus and mountain ranges are colder than corresponding regions at the sea level, not because they receive less heat from the sun, but because they have a thinner air blanket with which to retain the heat. An increase of 300 feet in altitude is considered equivalent to an increase of one degree in temperature. Scientists allow a change of one degree in temperature for each 300 feet of ascent. The summits of the mountains in the Andes lying directly on the equator are covered with snow the year around, and have much the same climate as is found at the sea level in northern Greenland.

Moisture is an important factor in climate. The Pacific and Atlantic coasts of South America, particularly in the latitude of the La Plata, have a very different climate owing to a difference, chiefly, in rainfall. The prevailing winds in this belt are from the east. The coast of southern Brazil has abundant rainfall, which extends inward for a long distance. The winds are robbed of their moisture, however, by the Andes, so that the Pacific coast of northern Chile lying in sight of the ocean is practically a rainless desert, almost devoid of vegetation. Some regions have so much rain that they are swampy and unhealthful. Ocean currents modify the climate of the Pacific Coast.

Two types of climate—the continental and the oceanic—require special mention. Water heats more slowly and cools more slowly than land. Large bodies of water, therefore, prevent excessive heat in summer and excessive cold in winter. The British Isles, surrounded entirely by the ocean, have a cool summer and a warm winter. They possess an oceanic climate. The upper Mississippi Valley, on the contrary, remote from the ocean, warms up in the summer and cools off in winter. It possesses a continental climate.

Generally speaking, a region having a medium temperature with a moderate amount of rainfall, well distributed through the year, is considered to have the most desirable climate. Local pride usually comes to the defense of local climate. Most would agree, however, that central and western Europe, and portions of North America, have the most desirable climate in the world.

Climbing-Perch, a sort of spiny-rayed fish remarkable for its need of fresh air and its ability to climb. It is a native of the East Indies. During rainy weather it leaves the water and actually ascends the trunks of palm trees to a height somewhat above a man's head in search of flies and other insects. It manages to climb by means of its tail, fins, and the peculiar saw-shaped edges of its gill covers. In this manner it advances its body an inch or so at a time. The story of climbing fishes was long regarded as an invention of the oriental imagination, or of equally untrustworthy travelers; but it is now accepted by scientists. "A fish out of water" is popularly supposed to be an impossibility, or, at the most, a very uncomfortable one; but this fish seems to be an exception. Sacs of water in the sides of the head seem to supply the moisture needed by the gills. See FISH.

Clinton, De Witt (1769-1828), a governor of New York. He was a lawyer of New York City and held many important positions, including the mayoralty of the city and a seat in the United States Senate; but his chief service was an insistent, intelligent, foreseeing advocacy, in season and out of season, of the building of the

Erie Canal from Buffalo, through the Mohawk Valley, to the Hudson. The story of his struggles with prejudice, ignorance, indifference, delay, and jealousy, and his final triumphant ride in the autumn of 1825 in a barge from one end of the completed waterway to the other, reads like a romance. He died in office. The commercial supremacy and growth of New York date from the successful issue of Governor Clinton's policy. See NEW YORK; ERIE CANAL.

Clinton, George (1739-1812), an American soldier and statesman prominent during the Revolution. He was a native of New York and received a most careful education at home. He served in the French and Indian War, at the close of which he took up the study of law, soon becoming interested in politics. He was elected to the colonial assembly where he was recognized as a leader among the Whigs. In 1775 he was elected delegate to the Continental Congress, and two years later was appointed brigadier-general in the Continental Army. The same year he was elected governor of New York a position of much difficulty at that time owing to the large number of Tories in the state. Clinton filled this office for eighteen years, showing great ability and discretion in his administration of civil affairs as well as in his military services. He opposed the adoption of the Federal Constitution because he believed it gave too much power to national officers. Alexander Hamilton, however, carried the state against him. In 1804 he was elected to the vice-presidency with Jefferson as president. He filled this office until his death.

Clinton, the county seat of Clinton County, Iowa. It is situated on the Mississippi forty-two miles above Davenport. It is served by several railroads, and has communication by steamboat with other river towns. Bridges crossing the river at this point connect the city with Illinois. The industries include paper mills, foundries, machine and car shops, and manufacture of glucose, furniture, wire-cloth, wagons, doors, and sashes. The city has two academies and Wartburg College is located here. The population in 1910 was 25,577.

Clio, klī'o, in Greek mythology usually the muse of history. She was the daughter of Zeus and Mnemosyne, and the mother of Hyacinthus and Hymenaeus. She is usually represented in a sitting posture, her head crowned with laurel, a roll of papyrus in her hand. There is also in Greek mythology a sea-nymph, daughter of Oceanus, named Clio.

Clio, a pseudonym of Addison, formed from the various signatures "C," "L," "I," "O," used by him in *The Spectator.* The letters probably stood for Chelsea, London, Islington, and the Office, the places where the essays were composed.

Clipper, a fast sailing vessel. The clipper is to sailing vessels what the ocean greyhound is to steamships, or the race horse to cart horses. The desire for speed led to the building of slender, graceful ships of great depth, for carrying fast freight. The superiority of steamships has caused the clipper to lose its place in public importance; but in the early half of the last century the record of the fastest clipper was of as much interest as the world's record for the trotting horse. An average of fifteen miles an hour for a long voyage was considered extraordinary.

Clive, Robert (1725-1774), an English soldier. His name is connected with the conquest and occupancy of India by Great Britain. He began service in India as a clerk, but exhibited military ability during the uprisings of the natives against the East India Company. He defeated the native nabob of Bengal in the battle of Plassey, June, 1755, and was appointed governor. His administration was made the subject of a Parliamentary inquiry. It will not bear a close examination, but if the acquisition of India is to be regarded as a great event, the name of Clive must be linked in fame with that of Warren Hastings as one of the men who brought about the result. Browning's poem, *Clive,* gives a striking portrait. See INDIA; HASTINGS.

Cloaca Maxima, klō-ā'kȧ măk'sĭ-mȧ, a great stone sewer of Rome. It passes under the forum and discharges into the Tiber. It is an excellent piece of engineering, dating from the time of Augustus. It

is still in use, but is absolutely prosaic and disagreeable, of interest chiefly to historians and scholars. The masonry consists of three concentric circles of hewn stones. The interior is about thirteen feet in diameter. The bodies of criminals displayed in the forum for the pleasure of the mob were usually thrown through a hole into this main sewer. A little statue near by was dedicated to Juno as the patroness of drainage purity.

Cloak, klōk, properly a loose, sleeveless outer garment worn as a protection against the weather. The name is erroneously used to designate a garment with sleeves, worn as an outer wrap by women. This garment is properly a coat. The name cloak is derived from an Anglo-Saxon word meaning bell, and was given to this garment on account of its flowing shape. The cloak was originally a garment worn by either sex. At various times, it has been an essential and picturesque part of man's attire. In the United States the cloak is now a woman's wrap; but in some countries it is still worn by men, and is a comfortable and satisfactory garment.

During the reign of Edward IV in England the cloak was the gentleman's garment. Laws were enacted to regulate its length and to designate the persons who should be allowed to wear it. During the sixteenth century the cloak came to be a garment of everyday wear. It was cut with large, loose armholes. The style is plainly shown in certain portraits of Henry VIII. A hundred years later the changing fashion of the coat caused the cloak to be done away with, except as a protection from cold and storm. The form of the cloak has changed with other fashions. At one time a half circle was the approved shape. This was called the Spanish cloak. It was trimmed with bands of fur which followed the contour of the neck, and extended down the edges of the cloak in front. In wearing, one edge was thrown across the opposite shoulder. This style of cloak is still worn in certain Italian cities.

For many years in America the shawl was the common outer garment for women. About 1810 the pelisse, a long, loose cloak with sleeves, came into fashion, and, on account of its warmth and convenience, was much in vogue. Spencer jackets, or short cloaks, were worn at various times. From 1840 to 1860, the shawl was again the popular wrap. The beginning of the modern cloak seems to have been an attempt to cut and shape the shawl into a warmer garment, and one that would allow the hands to be used while the arms remained covered.

About 1865 heavy cloaks came into fashion. Soon it was found that the former methods of home and individual manufacture were unsatisfactory, when applied to thick, heavy materials. The beginning of the trade in ready-to-wear cloaks was made by a few of the larger New York houses. A small number of cloaks were made up from the best Parisian models. So successful did this attempt prove that some firms gave up their other business entirely for cloakmaking. At first the cloaks were cut in one size only; soon in three sizes, small, large, and medium. At present many sizes are made, so that any figure may be fitted in readymade cloaks.

In the early days of cloak making a fashion was good for a whole season. The manufacturer could anticipate the trade and make up a stock beforehand. At present this is impossible, as fashions change so suddenly. The result is that cloakmaking establishments are large, employ an immense number of workers, and are managed with the best possible system, that satisfactory garments may be turned out on short notice. The successful manufacturer must have judgment and ability to foresee the public taste, that he may meet the demand without producing an over supply. The inspectors of cloth, fit, and workmanship are responsible members of the force, and good models, or "figures" to whom the garment may be fitted, are much in demand.

Clock, a machine intended to measure time by the movements of wheelwork. The chief parts of a clock are a frame or case, a train of wheels, moved by weights or a spring and regulated by the beats of a pendulum or by a balance wheel. The original meaning of the term clock is a

bell. It was applied at first only to the portion of the mechanism which struck the hours, but after a time the name was extended to the entire timepiece. The ancient term horologe, meaning literally, telling the hour, is a more appropriate term.

Mention of the clock may be found in old chronicles dating from the time of Charlemagne, and literary traces such as, "the clock struck the hour," and "the hand of the clock," may be found in the writings of the Middle Ages. It is thought that the earliest clocks were the work of the Saracens from whom the art of clockmaking was learned by the monks of Europe. Many remarkable timepieces are to be found in the clock towers of European cities. A number of clocks of more or less wonderful workmanship were made for the various cathedrals of Europe during the thirteenth and fourteenth centuries.

One of these celebrated clocks is found in the south transept of Strasburg Cathedral. The original clock was built in the thirteenth century. It has been pulled down and replaced twice. The present structure contains only a few pieces and decorative paintings of the old clock. It has a number of features which never cease to attract admiring spectators. The clock consists of four stories and turrets. On the lowest level a guardian deity steps forth, one for each day in the week; Apollo, drawn in a chariot by horses, on Sunday; Diana, drawn by a stag, on Monday; on Tuesday, Mars; Wednesday, Mercury; Thursday, Jupiter; Friday, Venus; Saturday, Saturn. A wooden angel standing in the first gallery, corresponding to the lower porch of a house, strikes the quarter hours on a bell held in his hand, while a genius standing at his side, reverses a sandglass. On the next gallery a skeleton of death, surrounded by four figures representing boyhood, youth, manhood, and old age, strikes the hour with a bone. On the third gallery, at noon of each day, the twelve apostles walk around a figure of the Saviour, bowing at his feet while he makes the sign of the cross. During the procession, a wooden cock perched on one of the pinnacles flaps his wings, stretches his neck, and crows, to the great delight of little folk.

The clock tower of the English House of Parliament contains a notable modern clock. The dials are twenty-three feet in diameter, and are set one hundred eighty feet above the ground. There are three independent sets of clockwork; one turns the hands, another strikes the hours, the third plays a set of chimes. The pendulum is about thirteen feet long and weighs between six and seven hundred pounds. It takes five hours to wind up the striking parts. The large bell on which the hours are struck is called Big Ben. It weighs thirteen tons and in calm weather it can be heard all over London. This clock cost over $100,000. It is considered one of the most accurate of the large timekeepers.

In America, clock making had its beginning prior to the Revolutionary War. The first clocks were tall, eight-day pieces, driven by weights requiring to be wound up but once a week. This style, now known as the grandfather's clock, was made entirely by hand. The works lasted for many years, and were placed in cases varying in style from a rude pine box colored with cheap stain to specimens of the richest cabinet work. This is the style of clock referred to by Longfellow in his well known lines:

> And from its station in the hall
> An ancient timepiece says to all,—
> "Forever—never!
> Never—forever!"
>
> Half-way up the stairs it stands,
> And points and beckons with its hands
> From its case of massive oak,
> Like a monk, who, under his cloak,
> Crosses himself, and sighs, alas!
> With sorrowful voice to all who pass,—
> "Forever—never!
> Never—forever!"

The great height of the early clocks was necessary to allow the weights to descend, and to give room for a long pendulum to swing. With the adoption of coiled springs instead of weights, shorter clocks grew into favor, and were made smaller and smaller, until, as a matter of fact, it is now difficult to draw the line between clocks and watches. The largest clock face

in the world is said to be that mounted above the Colgate & Co. factory at Jersey City. The minute hand is twenty feet long.

Some idea of the magnitude of the clockmaking industry in the United States may be gained from the following statistics taken from our last census report:

Capital employed	$8,792,653
Wage earners	6,037
Annual wages	$2,650,703
Annual cost of material used	$3,028,606
Annual wholesale value of clocks	$7,157,856

The clockmaking industry of the United States is centralized largely in Connecticut. Seven extensive Connecticut factories, with one at Boston and two in the vicinity of New York City, make over one-third of the clocks produced in America. Columbia University claims ownership of a clock that keeps time correct to within six seconds a year.

Cloister and the Hearth, The, a historical novel by Charles Reade published in 1861. It is commonly regarded as Reade's masterpiece. The plot is laid in the fifteenth century. It presents distinct and faithful pictures of daily life in Holland, Germany, France, and Italy in medieval times. The story is intensely dramatic. The character drawing is strong. Above all, Reade has here succeeded in portraying something of the strange combination of rugged brutality with a lofty spirituality which seems to have characterized the transition period. If the power displayed in the first part of this story were maintained throughout, it would stand beyond question where Swinburne places it "among the very greatest masterpieces of narration." See READE, CHARLES.

Cloth of Gold, a fabric of splendid appearance and great cost, much worn by the nobility during the Middle Ages. The manufacture and use are ancient. In the book of Exodus, where the vestments of the Jewish priests are described, it is said, "they did beat gold into thin plates and cut it into wires, to work it in the blue, and in the purple, and in the scarlet, and in the fine linen with cunning work." Both "wires" and flat strips of gold were used in weaving cloth of gold. It was usually combined with silk, but fabrics wholly of gold are not uncommon. Cloth of gold was used lavishly during the reign of Henry VIII of England. When Henry VIII and Francis I of France met in a plain near Ardres, France, in order to come to some understanding as to an alliance against Charles V of Spain, this cloth, then worth forty shillings, or nearly ten dollars a yard, was used so profusely by both nations that the place won the name of the Field of the Cloth of Gold. Heavy brocaded silk fabrics, interwoven with gold and silver, are used for ceremonial garments by the Chinese and Japanese, and also for hangings and decorations in their theaters and temples. The Japanese weave strips of gilded paper, twisted into thread, with or without silk, into their silken fabrics. These silks have the appearance of cloth of gold, but they are cheaper and more flexible. See FIELD OF THE CLOTH OF GOLD.

Clothing, garments worn for the sake of modesty and as protection against heat and cold. Adam and Eve, typical no doubt in this respect of primitive man, "sewed fig leaves together and made themselves aprons." The customary picture of the cave man represents him girded with a short garment of skins. When first known, the Eskimo dressed wholly in skins.

The study of costumes is fascinating. No doubt leaves, skins, and matting were the first materials. Weaving was practiced at an early day. Cloth of wool, flax, silk, and cotton was known to the most ancient people of whom we have any knowledge.

The garments of the Greeks may be taken as a type of ancient dress. The principal articles of female attire were the chiton and the himation, a skirt or tunic and a plaid we should call them. The chiton or skirt was long enough to reach from the neck to the feet, and wide enough to reach from finger-tip to finger-tip with the arms outstretched. It was sleeveless at first, but in later times had sleeves to the elbow. This garment was drawn to the waist by a girdle, and was fastened together over the shoulders by

brooches. The lower border was ornamented with colored embroidery. This garment was of linen or silk. The himation was a long, wide, woolen plaid in a variety of colors. It was wound about the shoulders and waist variously. Sometimes a fold was thrown over the head for a head dress. Sandals, a woolen petticoat, a band about the chest, and possibly a cap with jewelry completed the costume of the Greek woman. Her husband's chief articles of dress were a pair of sandals and a large, long himation. One of the Greek tragedians represents a wife as turning the laugh on her husband by hiding his plaid and sandals, rendering it impracticable for him to go abroad that day. Ordinarily, however, men wore, in addition, a short skirt-like garment suspended from the waist. In art, Vulcan, workingmen, and helots are represented as clad in this garment only.

The Roman woman wore clothing in imitation of her Grecian cousin. In this respect, the Greek woman was the Parisian of ancient times. Roman men wore a garment corresponding to the Greek chiton. It reached from the neck to the middle of the thigh. It was known as a tunic. The himation of the Roman was an enormous affair, known as a toga. It was elliptical in shape. Its length was three times, and its breadth twice the height of the wearer. In use it was folded lengthwise, forming a semicircle about six feet wide and eighteen feet long. This clumsy garment was disposed in such a way as to drape the person from head to foot. The full toga was worn only by adults. The putting on of the boy's first toga was an occasion of family ceremony and rejoicing. Both toga and tunic were colored and ornamented, according to the rank of the wearer. Purple was reserved for royalty. The tunic may be regarded as the forerunner of the modern shirt. The toga is the ancestor of the cloak, cape, and overcoat.

It would be difficult to outline even in brief the evolution of modern clothing. The Pilgrims and other early settlers of New England and Canada did not know how to dress comfortably. The poet Whittier attributed his delicate health to colds caught in boyhood for want of warm underclothes. Comfortable underclothing is a product of the last half century.

Changes in methods of making clothing are quite as marked as changes in styles. A century ago clothing was made only when ordered. A man gave an order to his hatter, was measured by his tailor and by his shoemaker. In the course of time his new clothes were ready. People of rank had tailors in their households. The idea of keeping readymade clothing in stock is recent. It grew out of the necessity of providing clothing in advance for soldiers and sailors. The soldier of the American Revolution went to the war clad in homespun from the backs of his own sheep. Part of the destitution at Valley Forge arose from the fact that no one had thought of making up shoes and suits in quantity, from which each soldier might select what fitted him.

The earliest readymade clothing store in this country was established in 1830, it is said, at New Bedford, Massachusetts. It was patronized by sailors who begrudged the time requisite to be measured and wait for a suit to be made. The notion spread to Boston and to other points along the Atlantic. The first considerable American trade in readymade clothing was built up with the mines of California and the region of the West, where a large population preceded the tailor. In 1861 the clothing world was astounded by a contract for $1,250,000 worth of uniforms for the United States army. The manufacture of clothing is now one of the world's great industries. In the United States, counting boots and shoes, men's clothing, women's clothing, furnishing goods, furs, gloves and mittens, hats and caps, hosiery, millinery, the annual value of the clothing manufactured runs over into the billions column, and forms a good tenth of the total value of American manufactures. The percentage for Great Britain is yet larger. The chief American centers of the clothing industry are New York, Chicago, Philadelphia, Baltimore, and Boston. The volume of readymade clothing for women is increasing rapidly.

COSTUMES

1, 2. Egyptian. 3, 4. Greek. 5, 6. Roman. 7. Assyrian. 8, 9. Byzantine. 10, 11. Knights (13 Cent.). 12. French (15 Cent.). 13. Florentine (16 Cent.). 14. Venetian (16 Cent.). 15. German (16 Cent.). 16, 17. Austrian (16 Cent.). 18. French (16 Cent.). 19, 20. English (17 Cent.). 21, 22. French (17 Cent.). 23, 24. German (17 Cent.).

The invention of the sewing machine has proved a boon to tailors. One operative can now do the work of many former stitchers with thread and needle. Formerly the tailor measured his customer, cut the cloth, and made the suit with his own hands. Now the designer plans, the cutter piles his cloth in many layers and cuts a score of identical suits, overalls, or overcoats at once. A suit passes perhaps through the hands of a dozen operatives. Each does a certain part of the work only. Experience has taught manufacturers what sizes to make and how to meet the needs of different parts of the country.

Clotho. See FATES.

Cloud, a mass of small globules of water, or of ice and snow, suspended in the air. Clouds are formed by the evaporation of water from land and sea. There is a theory that the condensation of the water vapor, which is so fine as to be invisible, into the larger globules of visible clouds, is due not only to a cooling of the air, but, in part at least, to the presence of dust particles and the repelling and attracting influence of electricity. Scientists have found that pure, dry air may be laden with vapor and be cooled without condensation but that, if at this point in the experiment, dust be injected without a change of temperature or the addition of more vapor, a mist forms at once.

Clouds form and float at widely different heights. It is not difficult, especially when a storm is coming up, to note clouds at different altitudes moving in two or more entirely different and even opposite directions, showing that they are floating in different layers of air. The warmer the air, the more moisture it can carry. When air has all the moisture it can carry it is said to be saturated. If saturated air be warmed it can take up more moisture. If saturated air be cooled it must drop part of its moisture, and we have a shower, or a rain, or a dew.

Clouds are not merely of great benefit, but are indispensable in carrying moisture from the place of their formation to the places where moisture is needed, and where shade is welcome. Shelley expresses this thought beautifully in his *Cloud:*

I bring fresh showers for the thirsting flowers
From the seas and the streams;
I bear light shade for the leaves when laid
In their noon day dreams.
From my wings are shaken the dews that waken
The sweet buds, every one
When rocked to rest on their mother's breast,
As she dances about the sun.

Clouds are classified according to their form and height. The chief three kinds are:

1. The cirrus, a light, feathery cloud frequently seen streaming across the sky. Cirrus clouds move swiftly, and are high up, six to ten miles, in a wind-swept region.

2. The cumulus or fleecy cloud is piled up like a fleece of wool. The bases of cumulus clouds are flat and the upper parts are dome-shaped. They pile up and tumble about as if tossed by strong winds and take innumerable forms of mountains, castles, minarets, and towers.

3. The nimbus, a dark, low, rain cloud. Rents in a nimbus frequently give magnificent views of the upper regions and other clouds.

It would be a mistake to suppose that all clouds can be referred to these three forms; for clouds occur in all sorts of combinations and intermediate forms, delightful to study.

A cloud record is kept readily by a numerical scale of from 1 to 8. An entry of 0 indicates a clear sky; 8 a dark, clouded sky in which no blue can be seen, and in which the sun cannot be located.

The brilliant colors of the clouds, gray, purple, orange, yellow, olive, and pink, are due probably to the refraction of light by minute dust particles rather than to the globules of water.

The height of clouds is found by two observers located at two ends of a given base line. Each observer measures the angle formed between the base and a line directed toward a part of the cloud agreed upon. From the length of the base and the value of the two angles adjacent to the base, the altitude of the triangle, that is to say, the height of the cloud, is easily computed.

See DEW; FROST; HAIL; RAIN.

Clough, klŭf, **Arthur Hugh** (1819-1861), an English poet. He was born in

Liverpool. He studied at Rugby and Oxford, and was much engaged with educational work. He was a friend of Matthew Arnold who commemorated him in *Thyrsis* and *Scholar Gypsy*. Clough's most noted poem is *The Bothie of Tober-na-Vuolich*. Clough belonged to the skeptical school, of which Arnold and Swinburne are other examples. It has been said of him that "he had neither the strength to believe nor the courage to disbelieve." His poems are vigorous in tone, hopeful in spirit, and contain many noble thoughts intermingled with touches of humor and pathos.

> What voice did on my spirit fall,
> Peschiera, when thy bridge I crost?
> 'T is better to have fought and lost
> Than never to have fought at all!

As I sat at the Café I said to myself
They may talk as they please about what they call pelf,
They may sneer as they like about eating and drinking,
But help it I cannot, I cannot help thinking,
How pleasant it is to have money, heigh-ho,
How pleasant it is to have money!

Clove, the unopened flower bud of an aromatic tropical tree. The name is from the French *clou,* meaning a nail, suggested by the shape. The clove tree is an evergreen from ten to forty feet in height, native to the Molucca or Spice Islands. Its cultivation has spread to the nearer parts of southeastern Asia, to eastern Africa, to Brazil, and to the West Indies. Cloves formed an important article of caravan traffic. When the passage around the south of Good Hope was discovered, Portugal got possession of the principal clove-producing islands and held them with inhuman efforts to monopolize a money-making traffic. The cloves of commerce are the dried flower buds. The calyx is about half an inch long with a four-cleft border. The round knob in the center of the calyx is the dried corolla. If allowed to ripen, the fruit resembles an olive. *Chambers* states that the annual clove production of Zanzibar on the east coast of Africa is 2,000,000 pounds. Cloves are a favorite seasoning in cookery. A bit of clove inserted in the hollow of a troublesome tooth will frequently relieve the toothache. Oil of cloves is obtained by heating cloves in water. It is a remedy for nausea. See SPICE; MAGELLAN.

Clover, an exceedingly valuable plant of the pea family. Latin *trifolium,* three-leaved. In architecture, a trifoliate or three-leaved pattern in the tracery of a church window or other part of church architecture was regarded as particularly appropriate to the doctrine of the trinity, or three in one nature of the Godhead. There is a superstition as old as the Romans that a serpent will on no account touch a leaf of the white clover. The shamrock, the national emblem of Ireland, corresponding to the rose of England and the thistle of Scotland, is usually considered to be a clover.

There are some three hundred kinds of clovers; but farmers are interested in but three,—red, white, and alsike (pink) clover. White clover is the special delight of bees. It is valuable on worn out lands, which it has a faculty of occupying and enriching. It is not a desirable pasture plant. Red clover is one of the most valuable plants on a farm. It makes excellent pasture and fine hay. Its roots penetrating deep into the soil absorb valuable food materials from the substratum. More than this, the nodules occurring on the roots have been found to be colonies of bacteria which have the property of absorbing the free nitrogen from the air in the soil and working it over into the richest kind of plant food. Clover then not only does not draw from the soil, as corn and wheat do, but a crop of clover actually makes the soil richer. If a growing crop of clover be turned under with a plow, the soil is enriched still more. A farm is never impoverished by growing clover. There is propriety, after all, in saying of one in comfortable circumstances, "He lives in clover." An interesting and valuable fact relating to clover raising, is the relation of the bumble-bee to seed production. It is the only insect that has a proboscis adapted to reaching the deep-seated nectar cup of the red clover. In its efforts to secure this nectar it comes in contact with the pollen and thus effects the cross fertilization without which seed production is impossible.

Cirrus

Cirro-stratus

Strato-cumulus

Cumulus

Cumulo-nimbus

Nimbus

CLOUDS

Red clover.

Soy bean.

Roots of red clover showing nodules.

Roots of soy bean, showing nodules.

CLOVER AND ITS RELATIVE, THE SOY BEAN.

Red clover will yield two crops in favorable seasons. It is considered good farming to take the first crop and plow the second under. For pasture, as well as hay, a mixture of timothy and red clover is ideal. A ton of red clover well cured contains more nourishment than an equal amount of the best timothy. Fed to cows clover hay increases the flow of milk. The states and provinces bordering on the Great Lakes are the red clover region of North America. Toledo is the greatest clover seed market. An acre produces from three to eight bushels of seed. A bushel contains from 12,000,000 to 25,000,000 seeds. From eight to fifteen pounds are required to sow an acre. A variety of red clover is known as mammoth clover.

Alsike clover is halfway in appearance and value and habits between white clover and red. Sweet clover is a fragrant, white-blossomed upright plant, allied more nearly to alfalfa.

See ALFALFA; PEA; BEAN.

Clovis (465-511), king of the Franks. His chief capital was Soissons. He married Clothilde, a Burgundian princess, who converted him from a heathen plunderer of churches into an upholder of the Church of Rome. His soldiers having borne away a vase of great size and beauty from a church, Clovis promised to restore it if it fell to him in the distribution of booty. When the booty was being distributed, Clovis asked for the vase in addition to his regular share. His soldiers could not very well refuse a request from their commander; but one rough old fellow raised his battleax and dashed the beautiful vase to fragments, crying that the king should have no more than his rightful share. Afterward, the story goes, at an inspection of his army, Clovis found fault with the condition of the armor of the soldier who had so offended, and clove him through the head. This is the tale of the vase of Soissons. Another tale runs to the effect that when hard pressed in battle with the Alemanni, Clovis made a vow that, if Clothilde's God would help him win the battle, he would desert his heathen gods for Christianity. The enemy fled; Clovis and 2,000 of his soldiers were baptized and received into the church by the Bishop of Rheims. The conversion of Clovis proved of great service to him in a political way, and brought the greater part of France under his banner. The Franks were the first important Teutonic people to adopt the orthodox form of Christianity. The other early converts (Goths, Burgundians, Lombards, and Vandals) had accepted the Arian form. The Franks afterward conquered the Burgundians, part of the Gothic kingdom, and the Lombards in Italy, and brought all these peoples into the Roman communion.

Club, an association formed usually for some social, literary, or political purpose. It is quite probable that there were clubs in Rome. Something of the sort appears to have been known among the officers of Roman garrisons stationed at a distance from the home city. London may be regarded, however, as the original home of the club. In its earliest form, the club existed in connection with some coffeehouse or tavern. Meetings were held usually in a large room of the establishment. Refreshments were served. Such organizations simply gathered around a dining table, at which the members presented themselves at a given hour, combining the taking of a regular meal with social intercourse.

In most clubs, it is understood that members are admitted by a ballot. A rejected candidate is said to have been "blackballed." Some clubs admit no visitors. The members of other clubs are permitted to invite guests. One of the earliest clubs of any note was formed in the seventeenth century at the Mermaid Tavern. Shakespeare, Beaumont, Fletcher, Sir Walter Raleigh, Donne, and Selden were members. The Kit-Cat Club of Queen Anne's reign was a Whig club. Its membership included Steele, Addison, Congreve, Robert Walpole, and many of the nobility, including the Duke of Marlborough. A rival Tory organization was known as the Beefsteak Club. The history of London clubs includes many curious names, such as the Unfortunate Club; the Lying Club, whose members were required to refrain from speaking the truth unless the president gave

express permission; the Ugly Club; the Surly Club; and the Split-farthing Club. The Literary Club, to which Dr. Samuel Johnson belonged, enrolled Sir Joshua Reynolds, Edmund Burke, Oliver Goldsmith, and Edward Gibbon. It is still in existence. As expressive of the qualities desirable in a member, Dr. Johnson coined the expression a "clubbable man."

There are now in London several scores of clubs with a total membership, possibly, of 100,000. One of the most noted is the Carleton Club, established by the Duke of Wellington. It occupies a palatial building, and is considered the headquarters of the Conservative party. It has about 1,600 members. The Reform Club is considered the headquarters of the Liberal party. Other London clubs are the Athenaeum, the Travelers, the Army and Navy, etc.

There are two or three hundred clubs in the United States. The most noted, possibly, is the Union League Club of New York. The alumni of the larger universities have established numerous clubs. A Yale club, a Harvard club, a Princeton club, etc., may be found in almost any large city. New York, however, is the club center of the United States. The Yacht Club has over 1,000 members; the Army and Navy, 1,200. The Knickerbocker Club and the Authors' Club are of a literary nature. The Press Club is composed of newspaper men. The Grolier Club encourages reprints in fine binding of rare old books. The University Club of Chicago is a notable organization, and occupies a striking building finished handsomely in oak. Nearly every city of importance in the Union has a commercial club, with a membership representing nearly every line of mental activity. Such clubs usually have commodious quarters, with conveniences for dining, and for playing games, a reading room, an assembly room, etc. Matters of importance to the city at large are taken up and discussed. Many civic reforms and enterprises are due to the various clubs of this nature. On the presentation of the regulation card, most commercial clubs extend the freedom of their quarters to the members of corresponding organizations in other cities.

Clyde, the chief river of Scotland. It rises in Lanarkshire and Dumfries, and flows westward into the Irish Sea. The river is about eighty miles in length. In its upper course it makes three distinct leaps ere it leaves the hills. The mouth is a broad estuary or firth. The channel has been dredged to permit large steamers to ascend as far as Glasgow. An outgoing steamer takes cargo at the wharves of Glasgow, but usually lies to at Greenock near the mouth of the river for passengers from the city to join it by rail. The Firth of Clyde is full of booms of timber from Norway. The lofty rock and castle of Dumbarton keep watch over a noble scene. Ships innumerable are passing up and down this busy stream. See GLASGOW.

Clytemnestra, klī-tĕm-nĕs'tra, in Greek legend, the wife of Agamemnon, king of Mycenae, and mother of Orestes. While her husband was absent at the Trojan War, Clytemnestra bestowed her favors upon Aegisthus, and the two succeeded in putting the husband to death after his return. After seven years Orestes avenged his father's death by slaying both Clytemnestra and Aegisthus. Clytemnestra was sister to Helen of Troy, and to Castor and Pollux. See AGAMEMNON; HELEN; CASTOR AND POLLUX.

Clytie, or **Clytia,** in Greek mythology, an ocean nymph. She became enamored of Helios, the sun god. Her affection was not returned and she pined away in consequence. For nine days she sat on the cold ground and mourned, but ever with her face turned toward the sun. At last the gods pitied her and allowed her to be transformed into a flower. Her feet grew downward into the ground and became roots; her body and arms became the plant, and her pretty face became a blossom, which turns always toward the sun. Thenceforth she was called the heliotrope, which means "sun-turning."

Coach. See CARRIAGE; CAR; STAGE; CAB.

Coal, a well known combustible mineral, used as a fuel. It varies in color from brown to black. It is brittle, it cannot be melted, and is not subject to decay. It is composed essentially of carbon, but con-

tains from five to six per cent of earthy matter. This is the part that is left behind in ash. Sulphur is found in almost all coal.

Coal is supposed to be derived from a vast growth of vegetation that accumulated in oceanic swamps, chiefly in a former era of rain and heat known as the carboniferous age. An intensely tropical climate caused a rank and rapid growth of tree-like rushes, now extinct, whose gigantic trunks, mingled with ferns and other plants, covered tropical areas to a great depth. A sinking of the earth's crust, followed by a deposit of soil, brought down by such floods as we have no conception of today, buried the vegetable matter of the old swamps beneath a mass of mud, a mile deep perhaps. Intense heat from the interior of the earth and pressure from above turned the plants themselves into a layer or vein of coal. Sometimes a new swamp of rank vegetation appeared above the old one; or in this way several layers of coal may have been formed, one above the other, with strata of stone intervening.

The nearest approach to coal formation nowadays are the peat beds in which vegetable fiber is accumulating from year to year. Should any considerable thickness of peat ever be covered with soil and subjected to great pressure and heat, we might expect it to become a coal measure.

Lignite is a form of coal that is but imperfectly converted. Traces of woody growth, as in the lignites of North Dakota and Texas, are still visible. Attempts to grind these coals and compress them into more solid bricks for general consumption have been made with entire success, save as to expense.

Hard coal, or anthracite, is coal that has been buried beneath great masses of earth, and hence has been subjected to such pressure and heat as to drive off the greatest possible percentage of matter that can be converted into vapors or gases, and leave a high percentage of pure carbon. The great hard coal bed of the world is that of Pennsylvania. It underlies an area 125 miles long by 35 miles wide. During the past fifty years 4,000,000,000 tons have been taken out. It is estimated that 15,000,000,000 tons remain. It will last a hundred years at the present rate of mining. About forty per cent is wasted needlessly in dust and in fragments left in the debris.

Soft coal or bituminous coal contains gaseous materials that have not been driven out. All grades of coal from soft to hard are to be found. The softer the coal, the more it swells in burning, and the denser the black smoke it gives off. The more recently coal has been formed, the softer it is likely to be.

Coal was not burned in the ancient world. We hear of the first in England about 852. American coal was mentioned by Father Hennepin who found it in the bluffs of the Illinois River near La Salle in 1673-80. It is said that the settlers of Pennsylvania did not know any use to which they could put the black stone that cropped out of the cliffs along their streams. Even after they had learned that it could be burned, and how to burn it, it was a long time before anyone thought of selling it. Each farmer drove up to a bank anywhere and shoveled in as much of the stuff as he cared to haul away. It was not until a way of getting it to Philadelphia and New York was opened up that coal began to have a money value.

At the present time the coal of the United States is spoken of as found in certain areas or districts, as the Rhode Island district; the Appalachian, extending from Pennsylvania to Alabama; the Michigan; the Illinois, including part of Indiana and Kentucky; an ill defined prairie district including localities from North Dakota to Texas; the Rocky Mountain area; and the states of the Pacific coast. Many of our coals, especially the lignites, belong to an age subsequent to that known as the carboniferous.

Although increasing quantities are produced in Nova Scotia, Vancouver Island, China, India, Australia, New Zealand, Orange Free State, and Brazil, Europe and the United States now produce practically all the coal of the world. Large fields in Alaska and adjacent parts of Canada may be expected to add to the world's output. More than half of the world's miners are

engaged in mining coal. The world's production of coal averages about as follows:

Countries.	Coal Area in Square Miles.	Long Tons.
United States	194,000	318,275,920
United Kingdom	9,000	236,147,125
Germany	3,600	169,448,272
Austria-Hungary	.....	40,650,000
France	1,800	34,502,289
Belgium	500	23,380,025
Russia	27,000	18,600,000
Japan and China	200,000	13,600,000
Australasia	.....	8,285,849
India	35,000	7,682,319
Canada	.....	6,814,755
Spain	500	2,800,000
Sweden	.....	320,984
South Africa	.....	3,015,000
Italy	.....	332,000
All other countries...	.....	4,250,000
Total, partly estim'd	471,800	866,104,538

An important use of coal is that for heating. Locomotives and stationary steam engines in manufactories requiring steam power consume enormous quantities. Illuminating gas is made from coal. Electric lights are in circuit with the power house in which electricity is generated, usually by burning coal. The smelting of iron is accomplished by means of coal. The various forms of iron, wrought, cast, and steel, are obtained from pig iron by the aid of coal.

Of these four uses, heating, lighting, smelting, and producing power, the last named is the most conspicuous. If coal were to give out suddenly, nine-tenths of the world's industries would stop until new methods of transportation and manufacturing could be devised. The production of iron would cease. Cities would be plunged into darkness. Trains would come to a standstill. The wheels of factories would stop. Surplus crops would be worthless—no way of carrying them. People would starve for want of a way to get food to them. Northern people would perish for want of a way to get fuel to them. Wood, water power, and oil would help us out, and doubtless a substitute for coal would be found. At the present rate of waste and consumption the known supply will last about 450 years. Germany formerly was a large exporter of coal. As long as possible during the war she got food from Holland and Switzerland in exchange for it. When they could no longer send food their factories were closed for want of fuel. Before the War, Great Britain exported 93,000,000 tons; Germany, 4,000,000; United States, 29,000,000. We are informed by the government reports that one-seventh of our coal is made into coke for the iron industry. Two-thirds of this amount is produced without regard to saving the valuable by-products driven off in its manufacture. Only about 4 per cent of the coal mined in this country yields its full value to society. The waste that blackens the sky over American cities could be converted into gas, tar, ammonia, benzol, and many by-products such as dyes, medicines, etc.

Coal Tar, a substance obtained in the manufacture of illuminating gas. It distills over with the gas and ammonia, but settles in the water which absorbs the ammonia, as a black, sticky mass, with a strong, unpleasant odor. It used to be regarded as of little value and was often not saved at all, but is now one of the sources of profit in the gas-making industry. Chemically it is a mixture of a great number of compounds, and by repeated distillations yields many valuable products, among which are benzene, creosote, carbolic acid, and naphtha. The coal-tar dyes, such as the series of aniline colors, which have so largely displaced vegetable coloring matter, are secondary products of coal tar. See DYESTUFFS.

Coast and Geodetic Survey, a bureau of the United States Treasury Department. The bureau was authorized in 1807 during the presidency of Thomas Jefferson. The survey was charged with gathering and disseminating information of importance to navigation. In 1878 the scope of the bureau was enlarged to include a scientific inland survey as well. The original coast line of the United States has been increased by the acquisition of Alaska and island possessions, until the total, measuring the general trend only, is upward of 25,000 miles. The actual shore line, including harbors and inlets, is several times as great.

In the earlier stages of the survey, the work was divided between officers of the

army and the navy, but the organization is now independent. A head office is maintained in Washington, with sub-offices in San Francisco, Seattle, Honolulu, and Manila. The field force consists of about seventy-five experts. The office at Washington includes about 150 clerks, engravers, draftsmen, instrument makers, printers, and minor employes. The survey owns a dozen steamers, several schooners, and a large number of launches.

A system of triangles has been surveyed along the coast from Maine to the Gulf. A second chain of triangles is under survey, following the 98th meridian from North Dakota to Mexico. Still a third system of triangles follows the thirty-ninth parallel from New Jersey and California, passing through thirteen states, and affording an accurate basis for local surveys. Permanent posts are set. As fast as the work is completed geodetic charts are issued. The establishment of boundaries between the different states is recognized as a part of the legitimate work of the survey.

The survey has published a vast amount of detailed and exact information regarding latitude and longitude, tides, currents, deep sea soundings, harbors, and channels. Pilots, captains, and naval officers provide themselves with charts issued by the survey. A series of levels established in the eastern part of the country is to be extended to the Pacific coast. These levels give cities and road makers an accurate basis for the level of ditches, sidewalks, sewers, water mains, and streets.

Coast Defense. See FORT.

Cobalt, a metal resembling silver in appearance; but with a slight trace of red. It is brittle and highly magnetic. It is harder than iron, but melts more easily and is a trifle heavier. Cobalt occurs in nature almost always in company with nickel, and is produced with it. Compounds of cobalt, called cobalt salts, have a peculiar way of changing color. When dry they are blue, and when wet they are red. Ink made of a cobalt salt is accordingly red, and produces red writing; but if the writing be dried before a fire until it loses its moisture, the writing turns blue. Exposure to vapor brings back a red color. If the ink be made very weak the red will not show, but heat will develop the blue. In this way secret correspondence has not infrequently been carried on. A letter in ordinary ink is sent with a second letter in invisible ink written between lines. Servants and spies not in the secret were satisfied with reading the letter written in black ink; while that written in sympathetic was unsuspected, save by the person for whom it was intended. Cobalt is a fast mineral dye, giving its name to cobalt blue. It is used in the manufacture of stained glass, paints, colored porcelain, etc. Cobalt blue is unrivaled for beauty and intensity. The mines at Cobalt, Ontario, are the chief source of the world's supply of Cobalt. The output is about 50,000 tons a year. See INK.

Cobden, Richard (1804-1865), an English statesman. He received a limited education, but acquired commercial experience in a warehouse in London, and, with the help of friends, founded a successful manufactory of cotton cloth in Manchester. Later, he was able to travel, both on the continent and in the United States. He began writing pamphlets on political conditions, and took an active part in the anti-corn law agitation. In 1841 he entered Parliament, where he became known as the "apostle of free trade." He was not only foremost in the repeal of the corn laws, but may be regarded as the statesman to whom, above all others, England owes her free trade policy. His services in Parliament led to the neglect of his own business. He became involved in difficulties; but friends raised a purse of $350,000 and presented it to him, so great was their appreciation of the value of his services in Parliament. He was offered numerous honors, including membership in the British cabinet and a baronetcy, all of which he persistently refused, preferring to represent the interests of the people throughout, as he understood them. Free trade clubs the world over, bear his name. See BRIGHT, JOHN; CORN LAWS.

Coblenz, or **Koblenz,** a city of Prussia. It is situated on a point of land formed by the junction of the Moselle and the Rhine. Coblenz is still a walled city.

It is fortified by outposts. Ehrenbreitstein on the east bank of the Rhine is the most strongly fortified place in Germany. The city is well supplied with bridges. A stone bridge of fourteen arches erected in 1344 crosses the Moselle. There are three bridges across the Rhine; the Rhenish bridge, an iron structure of three arches; a railway bridge, a brick structure, also of three arches; and the famous Bridge of Boats, the latter being a level bridge of pontoon construction.

The situation of Coblenz is picturesque beyond description, but the town itself is prosy enough. If we except the church St. Castor consecrated in 1208, a Romanesque basilica with four towers, there are no buildings of national reputation. There are many points of minor interest, however. The writing table of Frederick the Great, and many articles formerly belonging to the electors of Treves, the royal family of Baden, are shown in the Electoral Hall. A fountain erected by a French prefect bears the inscription, in French, of course, "The year 1812, memorable for the campaign against the Russians." The Russian general, St. Priest, added the ironical words, "Seen and approved by us. The Russian governor of the village of Coblenz, January 1, 1814."

Coblenz is headquarters for the wines of the Moselle and the Rhine. A magnificent park and a boulevard extend along the Rhine above the city. The old palace of the elector of Treves was a summer residence of the emperor and his family. The population for 1910 was 56,487.

See EHRENBREITSTEIN; MOSELLE.

Cobold, or **Kobold,** kō′bōld, a domestic spirit in northern mythology. According to the *Edda,* Odin formed the dwarfs from dust. They were of two sorts. The gnomes occupy deep caverns. The cobolds are house spirits and, if kindly treated, nestle beside the hearth and are a protection to the home. See EDDA.

Cobra, a venomous Indian serpent of the viper family. The cobra belongs to the class of hooded snakes. It is marked on the back of the neck with a figure resembling a pair of spectacles. It is sometimes called the "spectacled snake." It is a slender, active, deadly animal, about four feet long, infesting footpaths and copses. In the rainy season it takes refuge under the huts of the people. It makes its way into thatched roofs. It strikes without provocation and without warning. There is no certain antidote for its venom. As the peasants of India go barefooted, it is not strange that from 10,000 to 20,000 deaths from the bite of the cobra are reported annually. The government of India offers a standing bounty for its extirpation. Snake charmers go about enticing these dread serpents from their holes with tame snakes and music; then kill them. The cobra breeds rapidly; fifteen to twenty eggs are deposited in litter anywhere, and in a few days there are as many little cobras. The mongoose is the cobra's deadly foe. Kipling's *Second Jungle Book* describes a spirited contest between Rikki-tikki-tavi, the mongoose, and the venomous cobras. See ASP.

Cobweb. See SPIDER.

Coca, a shrub growing in Peru and Bolivia. The leaves, sprinkled with lime, are chewed by 10,000,000 Indians of these countries and adjacent parts of Brazil. Coca lessens the pangs of hunger, dilates the pupil of the eye, and gives immediate quickness of step. Mountain climbers claim that it prevents shortness of breath. In some respects the qualities of the leaf resemble those of opium. Its extensive use is parallel to that of opium, betel, and tobacco by other people. Cocaine, a powerful drug obtained from the leaves, is well known to medical science. It is administered to lessen pain and is injected by surgeons to produce local numbness during an operation. See TOBACCO; BETEL.

Cocaine. See COCA.

Cochineal, kŏch-ĭ-nēl′, an insect valuable as a source of dye stuff. It feeds on a branching, almost tree-like, kind of cactus, plantations of which have been established for the purpose in Mexico, Peru, some parts of the West Indies, and, of late, in the Canary Islands, parts of Spain, Algiers, and Java. Cochineal dyes were known to the Mexicans before the invasion of that country by white men. The ladies of Queen Isabella's court begged Cortez

to bring them a little of the beautiful dye. The cochineal industry has risen to millions of pounds of insects annually—far beyond the possibilities of the irregular supply formerly brought in by Indians.

The first step is the establishment of a field of cacti. This may be done by seed, by seedlings from a nursery, or best by cuttings, or lobes, planted where they are to grow. The field is ready in a year or two. A supply of insects with their eggs is then placed on each plant, and the young are left to grow up. The insect belongs to what Comstock calls mealy bugs. It is related also to the insect that produces shellac, and to various scale insects that have become orchard and field pests. The full grown male has a pair of wings and two pairs of eyes, but no way of seizing food. The female is a great eater, but has no wings or other means of making her escape. There are perhaps 150 females to one male; and it is the female heavy with eggs that is valuable. They are brushed off the cactus with soft brushes into bags, and are killed at once by dipping in hot water or being put into an oven. A workman gathers about two ounces a day. The insect is of a reddish brown, covered with a white, mealy powder, and is of the size of a small split pea. Seventy thousand are required to weigh a pound. Cochineal dye is produced by steeping the insects. It is scarlet and carmine, of great brilliancy. Cochineal makes a fine red ink as well.

Cockchafer, a common name for the European May beetle or May bug, which closely resembles the June bug of the United States. The cockchafer is an inch long and black in color. It is often a troublesome pest in Europe. Kingsley's *Standard Natural History* gives an interesting account of this beetle and the injury it wrought in France some years ago. The story shows the characteristics and habits of the insect. In the spring of 1865 May beetles appeared in large numbers, entirely stripping many oaks and other trees of their leaves. They lived, as is usual, only a few days, but the larvae hatched from them wrought terrible havoc among vegetables in the spring of 1866. It was estimated that $5,000,000 worth of vegetables was destroyed by them along the lower Seine. During the winter of 1866 and 67 the larvae, which require several years for metamorphosis, lived 16 inches below the surface of the ground where they must have been frozen, and thawed out again in the spring. In June of 1867 still a foot below ground, they entered the pupa stage from which they emerged as adult beetles in the fall of that year, to appear at the surface of the ground in April and May of 1868.

Cock Lane Ghost, the name given to the imagined cause of certain knockings which were heard in the house of a Mr. Parsons at No. 33 Cock Lane, Clerkenwell, London, in 1762. A "luminous figure" was said to have been seen in the same house. Dr. Johnson wrote an account of the supposed phenomena for the *Gentleman's Magazine.* In consequence Johnson was severely attacked for his credulity in a poem entitled, *The Ghost,* by Churchill. It was decided that the strange occurrences had been produced purposely by Mr. Parsons and his little girl. Mr. Parsons was therefore pilloried. The expression "Cock Lane Ghost," has come to be used to designate any tale of fright or credulity that is purely imaginary.

Cockatoo. See PARROT.

Cockatrice. See BASILISK.

Cockayne, The Land of, or **Cockaigne,** kŏk-ān′, a satirical poem, supposed to have been written by Michael of Kildare during the thirteenth century. It has been said that it is "probably the earliest specimen of modern English poetry which we possess." There is also an old French poem of the same title. The word Cockayne, although of uncertain origin, is probably from an old French word signifying abundance. Cockayne was an imaginary land of idleness and plenty. "The houses were built of cake and barley sugar; the streets paved with pastry; roast geese went slowly down the streets inviting the passers-by to eat them; buttered larks fell in profusion; and the rivers ran wine." It was doubtless intended to ridicule the stories of Avalon, the mythical island in the west. In the sixteenth century the word

Lubberland was used with the same significance. The term Land of Cockaigne has been derisively applied to both London and Paris. See AVALON.

Cockfighting, an ancient sport, presumably of eastern origin. The natural pugnacity of two male birds is taken advantage of to afford amusement to the spectators. While the term is applied particularly to fighting between two males of the domestic fowl, the natives of the Indies pit the males of the bulbul or eastern nightingale against each other, and the ancients appear to have pitted quails and partridges. The breed of fowls noted for fighting is a spare, tough, pugnacious variety of chickens known as gamefowls and the males as gamecocks. They weigh from four to five pounds. They have strong spurs which are frequently reinforced with steel or silver prongs fastened to the leg with straps. In fighting the cocks are set head to head on a plot of turf, called a pit, and are allowed to fight without interference. A contest between two well matched birds is a cruel and bloody one. They often fight until completely exhausted. More frequently, however, the overpowered bird puts out for a place of safety, while the other, if he has the strength left, celebrates his victory by a flap of the wings and a crow of triumph. Although under the ban and frequently forbidden by law, cockfighting still has its votaries, both in England and America. It is a favorite form of amusement throughout the Spanish-American countries. In the Philippines each village has its cockpit and each villager his gamecock. Their respective ancestry and qualities are a staple article of village talk. A recent writer states that when the thatched hut of a native takes fire, as so combustible an affair is pretty sure to do, wife and children get out the best way they can. His first care is the safety of the coop in which his gamebird is confined. This does not seem so strange when we remember that a horseman's first thought is for his racer when his barn takes fire.

Although not mentioned by Goldsmith in his enumeration of former joys and sports in the *Deserted Village,* cockfighting was at one time in such high esteem in England that the village schoolmaster had certain duties in connection with the sport for which he was entitled to fees. Opie Reed's *The Jucklins* gives an interesting picture of a southern gentleman much attached to the practice of cockfighting.

Cockle, a word of many meanings, most of which the dictionary defines sufficiently.

In zoölogy cockle is the name of a genus of bivalve mollusks comprising many species. They are widely distributed, forming an article of diet along the coasts of almost every country of the world. The two valves or shells are almost exactly alike, very closely locked together, and showing decided, often spiny, ridges running from hinge to edge. The cockle's most interesting characteristic is a large, fleshy, elastic foot by means of which it propels itself in a series of awkward leaps. It can also bury itself in muddy sand or emerge therefrom with great ease.

The gathering of cockles gives employment to many people in certain parts of Great Britain. In some places these mollusks are reared in "cockle gardens," and such cockles are said to excel in flavor.

In botany the cockle or corn-cockle is a plant belonging to the pink family. It is a native of Europe and western Asia but now is to be found in almost all parts of the world. It grows to a height of from one to three feet and bears a large purple blossom. It is found in grain fields and waste places, and becomes often a troublesome weed, as the seed must be screened from grain, for which process a special sieve is required. The best way to combat it is to sow grain which is entirely free from the seed of cockle.

Cocklebur, a weed which has proved very troublesome on cattle and sheep ranges. The plant belongs to the family of composites and was introduced into this country from Europe. The burs are hard and covered with hooked prickles. These prickles are not only annoying to animals, but if once entangled in the wool of sheep it is almost impossible to get them out. As the plant dies down to the ground each autumn its growth may be controlled by destroying all plants yearly before the seed ripens.

Cockney, a nickname for a native of London. The origin of the word is unknown. One suggestion is that cockney is related to coquina, a kitchen, in the sense of a hanger-on for broken victuals. Another equally wise suggestion connects the term with cock's egg—a small misshapen egg. A genuine cockney must be born within hearing of Bowbells,—that is within the city. The term is used rather in derision, as cockney conceit, cockney speech.

Cockney Poets, or **Cockney School,** a name given to a coterie of writers, including Shelley, Keats, Leigh Hunt, and Hazlitt. The term was first applied to these writers by Lockhart in *Blackwood's Magazine*. It suggested effeminacy, and was applied in derision.

Cockroach, a night insect allied to crickets and grasshoppers. The body is flat and oval when seen from above. The insect runs rapidly instead of jumping. Some species are wingless. Our native cockroaches are out-of-doors insects, preferring to live in fields and forests. During the day they conceal themselves under sticks and stones. The pale brown Croton bug or cockroach that hides about water-pipes and infests pantries is an immigrant from Asia. It is thought to have reached Europe and America in ships' cargoes. It is fond of flour and meal. It dreads powdered borax. It may be banished easily by the free use of insect powder.

Cocoa, kō′kō, **Cacao,** or **Coco,** the seeds of a tropical tree. By right the name should be spelled cacao, which would also avoid confusion with cocoa-nut, a seed as large as a child's head, while cacao or cocoa seeds, or beans as they are frequently called, are more like shelled almonds. Cocoa must be distinguished also from coca. Several species of small trees produce cocoa beans. Our supply comes chiefly from one of them. It grows in Portuguese Africa, in tropical America, and the West Indies.

The tree which produces cocoa beans branches at the height of a man's head, and bears cucumber-shaped pods several inches in length with a thick, warty rind. The pod contains a sweetish pulp, of the consistency of soft butter, and a handful of flat beans. The tree comes into full bearing in seven years, and yields two crops a year for thirty or forty years. The fruit is subjected to fermentation for a few days, often by burial in the earth, after which the beans are washed and dried.

Mexican Indians were users of cocoa before the discovery of America. Prescott tells of the vast quantities of cacao found growing along the Pacific coast by Pizarro and his followers, and of the use of cacao in Montezuma's household. "He was exceedingly fond of it, to judge from the quantity, no less than fifty jars or pitchers being prepared for his own daily consumption. Two thousand more were allowed for that of his household." Bags of cacao beans were used for money. The Mexicans called the beverage made from cacao chocolate, or cocoa water, whence our name chocolate.

Once the beans have been fermented, cleaned, and dried, they are ground. The fermenting takes the place of roasting for coffee. Pure cocoa goes on the market either in this form or as beans. Ground cocoa, even from the best houses, is likely to contain a judicious quantity of other material.

As ordinarily understood, chocolate is prepared by making a paste of ground cocoa, usually with sugar and such flavoring as cinnamon, cloves, or vanilla. The paste is compressed into cakes in iron molds and wrapped for the market. Chocolate is adulterated by putting in rice flour, starch, hazel-nuts, almonds, and cheap spices. The less gritty a cake of chocolate the purer the chocolate. The loose, dry powder is sold as cocoa; the sweetened cakes as chocolate. The world's annual production of cocoa is about 300,000,000 pounds. Of this amount the United States consumes a fourth. The demand is increasing rapidly. Ecuador leads the nations in the production of cocoa. The importers of Hamburg, Havre, and New York are the largest buyers.

Consul-General Herman R. Dietrich, in a report from Guayaquil, says that the principal product of Ecuador is cocoa, of which it furnishes nearly one-fifth of the world's production. Mr. Dietrich furnishes the following particulars.

The cacao tree grows on the warm lowlands and in the valleys tributary to the coast. The valleys adjacent to Guayaquil produce the greatest quantity of any district in the world. In 1900 there were 4,827 cacao plantations or farms in Ecuador, with a total of 58,551,142 trees. The yearly production, in pounds, was: In 1900, 41,134,900; in 1901, 51,311,700; in 1902, 53,621,300; in 1903, 49,921,300; in 1904, 61,339,600; in 1905, 47,225,400, and in 1906, 52,690,500.

Guayaquil cocoa has a specialty of its own, both in shape and aroma, and is easily distinguished from the cocoa of other districts. The lower grades are very strong and coarse in flavor, while the better grades contain a larger percentage of theobroma, making them more valuable. Here the cocoa is divided into two classes, viz., upriver (arriba) and down river (abajo); to the latter class belong the grades known as Machala, Balao, Naranjal, and Tenguel. The cocoa coming from the plantations situated in the upriver district is far superior and always sells at a higher price.

Ecuador's annual exports, in round numbers, amount to $8,000,000, two-thirds of which is cocoa, an article for which a world-wide demand exists and in the production of which Ecuador enjoys a high reputation. The planting and cultivating of the cacao tree is being carried on more extensively here every year, as it is the general opinion that the article has a splendid future and that the present production is not sufficient to meet the growing demand or consumption. The plantations here are mostly in the hands of natives, many of whom have amassed sufficient fortunes to make Paris their future home. On some of the large plantations there are very fine residences.

See Coca; Cocoanut, etc.

Cocoanut, the well known nut of a palm tree. The natural home of the cocoanut palm is on the shores of the low tropical islands of the Pacific. It is an important tree in Ceylon, Sumatra, Java, the Philippines, and Hawaii. The trunk of the tree is a foot or two in diameter. It rises straight and trim, carrying a crown or tuft of leaves at a height of seventy-five to one hundred feet. The leaves wave gracefully like plumes. Many are from ten to twenty feet in length and are used by the natives to thatch their huts. The nuts hang at the bases of the leaves in clusters of ten or fifteen. Several clusters may be expected to ripen during the year. A Jamaica tree yields 100 nuts a year. Cocoanut trees follow the coast in a fringe, and plant themselves naturally. Nuts fall from overhanging trees into the sea and are carried like boats along the coast and cast up to take root anywhere. A tree matures in seven or eight years and bears during the lifetime of a person. Cocoanuts are pretty well known all over the world. The fresh milk is a fit article of food. Dried cocoanut meat or copra, is an article of commerce from which seventy per cent of its own weight of cocoanut oil is extracted. Thirty ordinary nuts will yield a gallon of oil. It is used extensively to make stearine candles and soap. Like that of other palms, the sap of the cocoanut tree yields a sweet wine called toddy by the Hindus. On undergoing fermentation and distillation, sweet toddy yields arrack, as the Arabians call it, the alcoholic liquor of the tropics.

The cocoanut tree is put to many uses by the natives. The husk of the nut is surrounded by a fiber called coir, from which paper, twine, ropes, matting, doormats, mattresses, brooms, and brushes are made. The shell is used for ladles and cups. When burnt, it produces an excellent lampblack. Cocoanut charcoal is excellent as a powder for the teeth. The young leaves of the trees are eaten like cabbage. Cloth, hats, bonnets, fans, baskets, bedding, thatch, and fish nets are made of the leaves. The trunk is used for canoes, posts, rafters, and fences. The ribs of the leaves are used for paddles, spears, arrows, and torches. In fact, the uses to which the cocoanut palm may be put rival those of the bamboo in variety and number. Cocoanuts ripen and fall the year around. Average cocoanuts are worth about twenty dollars a thousand in New York, London, and other prominent seaports. American imports of cocoanuts and cocoanut products for a recent year were $2,000,000.

See Cocoa.

Cocoon. See Silk; Insects.

Cocytus, kō-sī'tus, in classical mythology, a river of Hades. The name came from a Greek word meaning to weep, and the Cocytus was the "River of Lamentation." Those whose bodies had not received burial rites were doomed to wander a hundred years on the banks of this stream before the ferryman Charon could take them across. See Hades.

Some poetic descriptions of Cocytus are:

Cocytus, named of lamentation loud,
Heard on the rueful stream. —Milton.

A blacke flood, which flowed about it round—
That is the river of Cocytus deepe
In which full many soules do endlesse wayle
and weepe. —Spenser.

There stood the first and prayed him hard to
waft their bodies o'er,
With hands stretched out for utter love of that
far-lying shore;
But that grim sailor now takes these, now those,
from out the band,
While all the others far away he thrusteth from
the sand.
. . . Those borne across the wave
Are buried; none may ever cross the awful roar-
ing road
Until their bones are laid at rest within their last
abode.
An hundred years they stray about and wander
round the shore,
Then they at last have grace to gain the pools
desired so sore. —Virgil.

Cod, an important food fish. There are some sixty species of cod and closely allied fishes. The common cod is spindle-shaped with a long tail. The skin is furnished with small, soft scales, inclosed in sacs. The mouth is wide. The lower jaw is furnished with a single feeler and the pair of lower front fins are reduced to the same office. The general color of the fish is brown above with dark spots, and silvery sheen beneath. It is from two to four feet long and weighs from two to seventy-five pounds. It is common in the North Atlantic from Greenland and Norway to Virginia and Spain, and in the North Pacific as far south as Oregon. The coasts of Norway, the British Isles, and especially the Banks of Newfoundland are noted for cod fisheries. Cape Cod was so named by the early navigators for the abundance of cod found off the coast. At certain seasons, cod approach the Lofoden Isles, off the coast of Norway, in shoals 100 feet deep, estimated to contain not less than 120,000,000 fishes.

Cod are taken with hook and line, the largest at a depth of 150 to 250 feet. Long lines secured with anchors, and having short lines attached at intervals of six feet, are set. A single schooner may set several trawls of this sort, carrying 12,000 or 15,000 hooks. The fishermen go along the lines in their dories, taking in the fish, and rebaiting the hooks. Cod are caught also by hand lines lowered from the sides of the fishing boat. Small fish and shell fish are used as bait. When cod are biting, a fishing boat is a busy place, as is expressed by the saying, "Fish, cut bait, or go ashore."

The eggs float. The young hatch in twelve days and attain the size of minnows in a few weeks. In a year they are a foot long. It is said that a 75 pound codfish produces 9,000,000 eggs in a single season. Nevertheless, the incessant fishing for cod has diminished the catch very noticeably. Over half the population of Newfoundland is engaged in codfishing. Boston and Gloucester, Massachusetts, handle about $3,000,000 worth of codfish annually. The total catch of the North Atlantic is estimated at about $25,000,000.

Codliver oil, obtained from the livers of the cod, is prepared in Great Britain, Iceland, Norway, and Newfoundland. It is used for dressing leather, and has of late obtained importance in medicine as a cure for consumption. Firms engaged in the purchase of oils for this purpose select the livers with care, and insist on the utmost cleanliness in rendering and bottling. The codliver oil having the best reputation with physicians is pressed from winter cod at the Lofoden Isles. It is marketed by way of Christiania.

The United States fish commission hatches and liberates about 350,000,000 young cod annually.

See Fish; St. Pierre.

C. O. D., an abbreviation of "collect on delivery." A clerk or messenger may be sent to deliver goods with instructions to collect the pay for the goods on delivery. Merchandise may be sent C. O. D. by an express company to be delivered on payment of the price. The company charges the customer for carrying the goods and charges the merchant for carrying back the money. See Express.

Code. See Cipher.

Code, a systematic compilation of law, authorized to take the place of preceding laws. By the successive enactment of new laws, repeals, amendments, and reënactments, the laws of a country gradually

grow into a state of confusion. Only the best trained lawyers know where to find all the law on a given point. When the law of centuries is gathered together and straightened out,—the law on divorce, for instance, being set forth clearly in a single paragraph or chapter, and all dead clauses omitted,—such a compilation is called the code. If approved by legislative authority, it takes the place of all prior law, and is the only law of the land. One of the most famous codes is the Justinian code, prepared by ten Roman lawyers in the reign of the Emperor Justinian. It is the foundation of most of the law of the civilized world. Another noted code is the code of Napoleon, prepared under the direction of Napoleon Bonaparte. It took effect in 1804-10. The code of Napoleon is the basis of the law of Louisiana, that state having been at one time a French possession. English law has not been codified. Prussian law was codified during the reign of Frederick the Great. In the United States, the most notable code is that prepared for New York under the supervision of the learned David Dudley Field in 1865. Although the legislature of New York could never be brought to adopt this code, it has formed the basis of codes for a score of states from Ohio to Oregon. See DECEMVIRS; JUSTINIAN I.

Code Napoleon. See LAW.

Codlin-Moth, the well known pest of the fruit grower. The adult is a beautiful little moth, with finely mottled gray, or rosy, front wings. The ends of the fore wings are marked by a brownish spot crossed by small, irregular golden bands. The moth lives in the pupa stage over winter. It emerges in late spring and lays its eggs in apple blossoms, just as the petals are about to fall. As soon as the eggs have hatched, the larvae begin to burrow into the young apple. The "worms" live in the core of the apple and cause the fruit to wither and fall. When full grown, the larvae eat their way out through the side of the fruit. They then spin their cocoons in some sheltered place and remain dormant over winter. The codlin-moth is the worst enemy of the orchard. It has to be fought by spraying the trees with a copious shower of Paris green water as soon as possible after the petals fall. Particles of Paris green, lodging in the calyx, are eaten by the young larvae. "The falling spray," says Comstock, "lodges in the blossom end of the young apple, and the larva which hatches from an egg laid in this position gets a dose of poison with its first meal, and dies before it can eat its way into the apple." One authority says that $8,000,000 a year are spent in spraying American apple orchards to prevent the ravages of the codlin-moth.

Codliver Oil. See COD; OIL; LOFODEN.

Cody, kō′di, **William Frederick** (1846-1917), an American scout and showman, best known as "Buffalo Bill," born in Scott County, Iowa. The family moved to the vicinity of Fort Leavenworth, and here, while still a child, young Cody was employed by express companies to carry packages across country on horseback. He was hardly out of boyhood when he was employed as a government scout. He became distinguished as a fearless rider, a keen and skillful hunter, and an expert plainsman. Cody won the name of Buffalo Bill by contracting with the Kansas Pacific Railway Company to supply its laborers with buffalo meat. It is said that he killed over four thousand buffaloes during one season. In 1883 he succeeded in organizing the "Wild West Show," a scheme he had long cherished. He gathered a large number of Indians and cowboys, collected much valuable material, of which the famous "Deadwood Coach" is perhaps the best example, and presented an exhibition of early frontier life which became known the world over. Cody is the last of the six great scouts of America. The others are Boone, Carson, Crockett, Bridger and "Wild Bill."

Co-education of the Sexes. In the United States over 96 per cent of pupils enrolled in elementary schools are in mixed schools. In public secondary schools the per cent is slightly less, being about 95. The high schools where the sexes are separated are found principally in Boston, New York City, Philadelphia, Baltimore, Charleston, and New Orleans. The establishment

of manual training high schools has increased slightly the proportion of pupils in separate schools. The large majority of women in colleges are in co-educational institutions. Excluding institutions of higher learning for women only, we have in the United States 68 per cent of such institutions co-educational.

In foreign countries we find a different state of affairs. In England 65 per cent of elementary pupils are in mixed schools, in Scotland 97 per cent, in Ireland 51 per cent. In France separate schools are the rule in elementary departments, but sentiment is gaining in favor of mixed schools. In the German States separate elementary schools for the sexes are maintained as far as practicable. In Italy segregation is almost universal. In Scandinavian countries conditions more nearly like those in the United States prevail. In England separate secondary schools are the rule, but highly successful experiments in co-education are being conducted in Keswick and Harpenden. In Germany the Grand Duchy of Baden has made extensive experiments in co-education in secondary schools and favorable reports are given out, but, generally speaking, segregation is the practice. Attempts are being made to bring the secondary schools for girls up to the efficiency and scope of schools of like grades for boys. As far as higher educational institutions in Europe are concerned, women are for the most part excluded. However, sentiment in favor of their admission seems to be gaining. Evidence of this is the increasing attention to subjects in which women especially are interested, such as domestic science and home and municipal sanitation.

To return to the United States, it may be observed that the number of girls in secondary schools is increasing at a much more rapid rate than the number of boys. The same may be said of higher institutions of learning, if we leave out of consideration the professional and technicological schools. Two reasons for co-education are chiefly responsible for its extent. It is more economical thus to educate, in the opinion of very many parents. The belief in the justice of equal opportunities for the young regardless of sex also acts to increase the number of co-educational institutions. However, the latter cause for increasing co-educational institutions is also the basis for agitation for segregation of the sexes. It is contended that equal opportunity for each sex demands unequal education, or, at least, a different education for the sexes. What educates one may not educate another at all. If the sexes require different preparation in order that each may fulfil its function, then co-education may be injurious for either if it is adapted to the other. The main arguments for and against co-education are as follows.

The movement for segregation of sexes in secondary and higher institutions of learning assumes fundamental sex differences. It attempts to prevent an alleged fatal feminization of education due to the preponderance of girls in boys' schools, or even the presence of girls at all in such schools. It is feared that otherwise the tendency will be to emasculate education so that it may not be too rugged for girls. With the progress of civilization we have an increased differentiation of function, and this bears on the question of education. The docility of the girls may be inspiration to better manners on the part of the boy, but he loses virility. He may have too good manners. He should work off his natural brutality to a certain extent. The girl, too, loses some of the bloom of the maiden. Thus there is a loss on both sides of the distinctive characteristics of each sex.

Girls are superior in certain studies, language for example. Girls like the classification element in botany, while boys prefer studying the habitat of plants. Therefore, in all points in the curriculum, not only is there a difference of taste as to subjects but as to the carrying out of the instruction in each subject. G. Stanley Hall says: "When we look the facts squarely in the face, we find that constant association of the sexes tends to rub off a little of the charm which each normally feels for the other." From this point of view it is argued that co-education tends to lessen the probabilities of marriage.

On the side of co-education it is contended that the objections urged against the custom are valid as against the abuse of the system and not against co-education itself. Schools may be "feminized" by effeminate men more effectually than by womanly women. The choice of electives in secondary and higher institutions removes objections urged against boys and girls being educated in the same institution. Injuries to the health of girls are due to ignorance of simple hygienic laws, and may be avoided without segregation. Courteous manners are not evidences of loss of virility. Ideals of conduct are not properly related to sex. The ruder forms of vice flourish under conditions obtaining in separate schools for men. In answer to the objections made by young men to the presence of young women in college classes, it is urged that young men thus objecting are the dissolute or the boorish. Referring to the question of marriage, David Starr Jordan says: "It is true, no doubt, that cultivated women are more exacting than are other women. They are less likely to marry for convenience, and they expect more of their husbands. For these same reasons their marriages are less likely to prove unhappy."

As education becomes more scientific it will become more differentiated. Larger opportunities will be given each one, boy or girl, young man or woman, by suiting the instruction to the needs of each. This will necessarily result in a large number of electives in any curriculum. There will always exist, however, a considerable portion of the course of study which may be educative to persons of both sexes. The co-association of the sexes seems to be the natural law of life at all its stages.—A. W. RANKIN, Professor of Education, University of Minnesota.

Coeur de Lion, kûr dē lī′ŏn, lion-hearted, a name given to Richard I of England, because of his courage. See RICHARD.

Coffee, kŏf′fē, the dried seed of a laurel-like evergreen shrub. Its native home is Abyssinia or Arabia. It grows to a height of six to thirty feet, but in cultivation it is pruned to a bush little higher than a man's head. Coffee trees are started in nurseries and are transplanted like fruit trees. A tree begins to bear when three years old, and produces from one to five pounds for twenty years. Methods of cultivation do not seem to differ materially from those used in raising cherries which, in fact, the ripe fruit resembles. In harvesting, the ripe berries are shaken down on cloths under the trees, the fruit is dried in the sun, then pulped, as the process is called, and washed. After drying again, and hulling and cleaning, the coffee beans are picked over, sorted, and put up in bags for market. Machines have been invented for removing the pulp green, thereby hurrying the crop to market. Mocha coffee gets its name from an Arabian port that formerly exported coffee. The supply of Mocha coffee is limited. There are no plantations. It is produced by groves of bushes surrounding the homes of the Arabs. Most of it is used by the Arabs themselves. Local dealers purchase small quantities, much as traders buy blueberries from the Chippewas. When a load has been collected in this tedious way, it is sent off in a caravan to Aden, perhaps 700 miles away.

Rio coffee is named from a Brazilian seaport. Brazil produces two-thirds of the world's coffee. Java coffee is supposed to come from the island of Java, but it is difficult to rely on names any more. Ceylon, Porto Rico, Cuba, Hawaii, and the Philippine Islands have large plantations or coffee orchards, as they are sometimes called. The United States is the great coffee market of the world, the people of Great Britain and the Continent being more inclined to tea. New York receives more coffee than any other city in the world. Ground coffees are so adulterated with carrot, parsnip, dandelion, beans, peas, lentils, and other cheap ingredients that public favor has been extended to whole coffee that may be ground by the grocer under the eye of the purchaser. Even then artificial coffee beans are palmed off. Adulterants mixed with coffee are ground up into a sort of dough. Machines have been devised for pressing kernels out of this paste that when dried and roasted look enough like the genuine to pass careless inspection.

An article in the United States Consular Report for February, 1904, gives much interesting information relative to the cultivation of coffee. According to the writer, there are in Asia, Africa, and America 49,000 coffee plantations, having 1,800,000,000 coffee-bearing trees. There are employed in the industry 2,220,000 men, women, and children. The total annual production is 2,881,000,000 pounds, or 21,500,000 bags. Five hundred trees are set to the acre. The average yield per tree is 1 3/5 pounds. The average cost of raising per pound is 4.7 cents. The average selling price at the plantation is 9 cents. The total value of the coffee crop to the planters is given at $225,000,000. Bailey's Cyclopedia (1908) puts the world's total production at "over 1,500,000,000 pounds" yearly.

Cofferdam, a contrivance resorted to by bridge builders. A typical cofferdam may be likened to a huge barrel without head or bottom. It is built around the spot where it is desired to erect a pier. Water and mud are pumped out, enabling workmen to enter and lay a proper foundation for the proposed pier. If the bottom, for instance, be of clay it may be possible to excavate to some depth to secure proper footing. In case it is necessary to go deep into the bottom for a footing the caisson is employed. Not infrequently an engine drives two tight circles of piles, one within the other, and fills the space between the circles of piling with clay rammed down close to make it water-tight. See CAISSON.

Coffin, Charles Carleton (1823-1896), an American novelist. He was born at Boscawen, New Hampshire. After receiving an academic education he turned his attention to civil engineering and later to telegraphy. When about thirty years of age he began to write for Boston newspapers and during the Civil War was correspondent for the Boston *Journal.* He also reported the Austro-Prussian War of 1866 and the Paris Exposition of 1867. From this time he was engaged chiefly in literary work, his earlier works being published, as were his letters over the name of "Carleton." His works include *Days and Nights on the Battlefield, Winning His Way, Boys of '76, Old Times in the Colonies, Story of Liberty, Following the Flag, Life of Garfield, Life of Lincoln, Caleb Krinkle.*

Coffin, Levi, a noted American abolitionist. He was born near Newgarden, North Carolina, in 1798, and died in Avondale, Ohio, in 1877. His father was a farmer. Young Coffin removed to Ohio and engaged in farming. He took an active interest in the colored people, and was one of the most persistent and prominent of those who helped runaway slaves on the way to Canada, being known, in fact, as the "president of the underground railway." See UNDERGROUND RAILWAY.

Cognac, kōn'yȧk, a noted brandy, so called from the town of that name in southwestern France. It is made by fermentation and distillation from white grape wine. See ALCOHOL; WINE.

Cohesion, the attraction or force by which the various particles of the same material cling together. The attraction between paint and wood is adhesion. The attraction between the particles of a copper wire is cohesion. If wires of the same size be tested for their strength of cohesion, that is to say, for their breaking strength, the relative results are about as follows: Gold, 15; silver, 19; platinum, 26; copper, 30; soft iron, 36; steel, 56. Heat diminishes attraction of cohesion. Liquids have less cohesion than solids. If a substance be heated sufficiently, attraction of cohesion may be entirely overcome and repulsion set up, that is to say, the substance may be converted into a gas. See GLUE.

Coin, a piece of metal passing from hand to hand as money. Coin is also used in a collective sense for metallic money. An establishment in which coin is made is known as a mint. The study of coins is called numismatics. It has been the practice from antiquity to stamp coins with the portrait of some ruler or other person whom it is desired to honor. The side of the coin which contains the face or portrait is called the obverse; the other side is called the reverse. Our only knowledge of the features of Alexander the Great and other historical personages is derived from the obverse of ancient coins.

COFFEE IN BLOOM—Costa Rica

The collection and sale of old coins has become a business in itself. Dealers in the Old World cities fill their windows and showcases with trays containing a bewildering display of coins from all parts of the world. The ruins of ancient cities have been ransacked for specimens of coinage. It is surprising how many different coins have been found in China, Japan, India, Persia, Turkey, Egypt, and other seats of ancient civilization. Greek coins are found in the excavations of old temples and sites of former cities. Schliemann found coins in old Troy. Roman coins are found seemingly wherever the Romans pitched their camps. The ancient gold and silver coins are in a very fair state of preservation.

In the eyes of a dealer, the value of a coin depends on its age, rarity, and condition. The more a coin has been worn the less it is worth. A rare coin in poor condition is worth many times the price of a common coin in perfect condition. A few prices of American coins quoted from the catalog of a New York dealer may not be without interest: The twenty dollar gold piece of 1849 is quoted at $125; the ten dollar gold piece of 1798 at $25; the five dollar gold piece of 1822 at $200; the three dollar gold piece of 1875 at $30; the quarter eagle of 1826 at $20; the gold dollar of 1875 at $12; the silver dollar of 1794 at $50; the silver half dollar of 1797 at $40; the silver quarter of 1827 at $50; the silver twenty cent piece of 1877 at $1.50; the silver dime of 1804 at $6; the silver half dime of 1802 at $50; the silver three cent piece of 1873 at $0.60; the nickel five cent piece of 1877 at $1.25; the nickel three cent piece of 1877 at $1.10; the bronze two cent of 1873 at $0.75; the bronze cent of 1856 at $3; the copper cent of 1799 at $25; the copper half cent of 1796 at $25; the pine tree shilling of Massachusetts at $25; Lord Baltimore's penny of 1769 at $50; the Virginia shilling at $25; the Connecticut three pence of 1737 at $50; the New York gold doubloon of 1787 at $150; the Vermont half dollar at $125; the Kentucky halfpenny of 1796 at $10. Pieces coined by order of the Continental Congress vary in value from ten cents to thirty dollars. Auction sales of rare coins are even more interesting than book auctions. They are attended by eager purchasers. At a recent auction in New York City 561 pieces fetched $7,000. An American silver dollar of 1804 was bid in at $1,100. A twenty dollar gold piece of 1849 brought $150. A dollar of 1838 brought $150. Two half dollars brought $78 each. Seven half cents sold for a total of $304. At a recent sale a Chicago man paid $2,165 for an American ten dollar gold piece of 1822.

The members of a numismatic society in Chicago own a total of 350,000 coins. One member owns 65,000 pieces. The society includes many wealthy members. They design to center their collections finally in the Field Museum. The greatest collections of coins abroad are to be seen in the museums of Berlin and Paris. The books written on coins and coinage form a large library in themselves.

The coins issued from the United States Mint from 1792 to January 1, 1908, are the following:

GOLD COINS.

Double Eagles—Authorized March 3, 1849; weight, 516 grains; fineness, .900. Total amount coined to Jan. 1, 1908, $2,083,762,800. Full legal tender.

Eagles—Authorized April 2, 1792; weight, 270 grains; fineness .916⅔; weight changed, act of June 28, 1834, to 258 grains; fineness changed, act of June 28, 1834, to .899225; fineness changed, act of Jan. 1837, to .900. Total amount coined to Jan. 1, 1908, $430,540,780. Full legal tender.

Half-Eagles—Authorized April 2, 1792; weight 135 grains; fineness, .916⅔; weight changed, act of June 28, 1834, to 129 grains; fineness changed, act of June 28, 1834, to .899225; fineness changed, act of Jan. 8, 1837, to .900. Total amount coined to Jan. 1, 1908, $322,053,765. Full legal tender.

Quarter-Eagles—Authorized April 2, 1792; weight, 67.5 grains; fineness, .916⅔; weight changed, act of June 28, 1834, to 64.5 grains; fineness changed, act of June 28, 1834, to .899225; fineness changed, act of Jan. 18, 1837, to .900. Total amount coined Jan. 1, 1908, $32,411,255. Full legal tender.

Three-Dollar Piece—Authorized Feb. 21, 1853; weight, 77.4 grains; fineness, .900; coinage discontinued, act of Sept. 26, 1890. Total amount coined, $1,619,376. Full legal tender.

One Dollar—Authorized March 3, 1849; weight, 25.8 grains; fineness, .900; coinage discontinued, act of Sept. 26, 1890. Total amount coined, $19,499,337. Full legal tender.

One Dollar, Louisiana Purchase Exposition—Authorized, June 28, 1902; weight, 25.8 grains; fineness, .900; total amount coined, $250,000.

One Dollar, Lewis and Clark Exposition—Total amount coined to Jan. 1, 1908, $60,069.

SILVER COINS.

Dollar—Authorized April 2, 1792; weight, 416 grains; fineness, .8924; weight changed, act of Jan. 18, 1837, to 412½ grains; fineness changed, act of Jan. 18, 1837, to .900; coinage discontinued, act of Feb. 12, 1873. Total amount coined to Feb. 12, 1873, $8,031,238. Coinage reauthorized, act of Feb. 28, 1878. Coinage discontinued after July 1, 1891, except for certain purposes, act of July 14, 1890. Amount coined to Jan. 1, 1908, $578,303,848. Full legal tender except when otherwise provided in the contract.

Trade Dollar—Authorized Feb. 12, 1873; weight, 420 grains; fineness, .900; legal tender limited to $5, act of June 22, 1874, (rev. stat.); coinage limited to export demand and legal-tender quality repealed, joint resolution, July 22, 1876; coinage discontinued, act Feb. 19, 1887. Total amount coined, $35,965,924.

Lafayette Souvenir Dollar—Authorized by act of March 3, 1899; weight, 412½ grains; fineness, .900; total amount coined, $50,000.

Half-Dollar—Authorized April 2, 1792; weight, 208 grains; fineness, .8924; weight changed, act of Jan. 18, 1837, to 206¼ grains; fineness changed, act of Jan. 18, 1873, to .900; weight changed, act of Feb. 21, 1853, to 192 grains; weight changed, act of Feb. 12, 1873, to 12½ grams, or 192.9 grains. Total amount coined Jan. 1, 1908, $174,386,696.50. Legal tender, $10.

Columbian Half-Dollar—Authorized Aug. 5, 1892; weight, 192.9 grains; fineness, .900. Total amount coined, $2,500,000. Legal tender, $10.

Quarter-Dollar—Authorized April 2, 1792; weight, 104 grains; fineness, .8924; weight changed, act of Jan. 18, 1837, to 103⅛ grains; fineness changed, act of Jan. 18, 1837, to .900; weight changed, act of Feb. 21, 1853, to 96 grains; weight changed, act of Feb. 12, 1873, to 6¼ grams, or 96.45 grains. Total amount coined to Jan. 1, 1908, $87,646,679.75. Legal tender, $10.

Columbian Quarter-Dollar—Authorized March 3, 1893; weight, 96.45 grains; fineness, .900. Total amount coined, $10,000. Legal tender, $10.

Twenty-Cent Piece—Authorized March 3, 1875; weight, 5 grams, or 77.16 grains; fineness, .900; coinage prohibited, act of May 2, 1878. Total amount coined, $271,000.

Dime—Authorized April 2, 1792; weight, 41.6 grains; fineness, .8924; weight changed, act of Jan. 18, 1837, to 41¼ grains; fineness changed, act of Jan. 18, 1837, to .900; weight changed, act of Feb. 21, 1853, to 38.4 grains; weight changed, act of Feb. 12, 1873, to 2½ grams, or 38.58 grains. Total amount coined to Jan. 1, 1908, $55,927,628.10. Legal tender, $10.

Half Dime—Authorized April 2, 1792; weight, 20.8 grains; fineness, .8924; weight changed, act of Jan. 18, 1837, to 20⅝ grains; fineness changed, act of Jan. 18, 1857, to .900; weight changed, act of Feb. 21, 1853, to 19.2 grains; coinage discontinued, act of Feb. 12, 1873. Total amount coined, $4,880,219.40.

Three-Cent Piece—Authorized March 3, 1851; weight, 12⅜ grains; fineness, .750; weight changed, act of March 3, 1853, to 11.52 grains; fineness changed, act of March 3, 1853, to .900; coinage discontinued, act of Feb. 12, 1873. Total amount coined, $1,282,087.20.

MINOR COINS.

Five-Cent (Nickel)—Authorized May 16, 1866; weight, 77.16 grains, composed of 75 per cent copper and 25 per cent nickel. Total amount coined to Jan. 1, 1908, $29,558,578.20. Legal tender for $1, but reduced to 25 cents by act of Feb. 12, 1873.

Three-Cent (Nickel)—Authorized March 3, 1865; weight, 30 grains, composed of 75 per cent copper and 25 per cent nickel. Total amount coined, $941,349.48. Legal tender for 60 cents, but reduced to 25 cents by act of Feb. 12, 1873. Coinage discontinued, act of Sept. 26, 1890.

Two-Cent (Bronze)—Authorized April 22, 1864; weight, 96 grains, composed of 95 per cent copper and 5 per cent tin and zinc. Coinage discontinued, act of Feb. 12, 1873. Total amount coined, $912,020.

Cent (Copper)—Authorized April 2, 1792; weight, 264 grains; weight changed, act of Jan. 14, 1793; to 208 grains; weight changed by proclamation of the president, Jan. 26, 1796, in conformity with act of March 3, 1795, to 168 grains; coinage discontinued, act of Feb. 21, 1857. Total amount coined, $1,562,887.44.

Cent (Nickel)—Authorized Feb. 21, 1857; weight, 72 grains, composed of 88 per cent copper and 12 per cent nickel. Coinage discontinued, act of April 22, 1864. Total amount coined, $2,007,720.

Cent (Bronze)—Coinage authorized, act of April 22, 1864; weight, 48 grains, composed of 95 per cent copper and 5 per cent tin and zinc. Total amount coined to Jan. 1, 1908, $16,428,043.68. Legal tender, 25 cents.

Half-Cent (Copper)—Authorized April 2, 1792; weight, 132 grains; weight changed, act of Jan. 14, 1793, to 104 grains; weight changed by proclamation of the president, Jan. 26, 1796, in conformity with act of March 3, 1795 to 84 grains; coinage discontinued, act of Feb. 21, 1857. Total amount coined, $39,926.11.

SUMMARY.

	Value
Gold coinage	$2,890,198,640.00
Silver coinage	941,224,082.95
Minor coins	51,450,524.91
Total coinage	$3,882,873,247.86

See MONEY.

Coke, the solid portion that remains after coal is subjected to intense heat. Coke is produced ordinarily in so-called coke ovens of the beehive type. One

hundred bushels of coal are poured into the oven, which is then heated gradually to a temperature of 1400° C. As soon as the heat reaches 100° C. gas begins to escape; tarry products are given off up to 600° C. First class coke rings with a metallic sound and has a silvery luster. It is of much importance in melting metals, as it burns with a pure flame without gas or smoke, and, being pure carbon, gives a most intense heat. In some sections of the country, where coke is in great demand for iron furnaces, the gas and tar products are sold cheaply as by-products, or allowed to go to waste. In the sections remote from the iron regions coal is heated for illuminating gas, and coke is a by-product. Where there is a demand it is sold chiefly as fuel. It is not so easily kindled as coal, but is an excellent fuel for heat. Coal is expected to yield about sixty-five per cent of its own weight in coke. The annual coke production of the United States is about 22,000,000 tons, over half of it in Pennsylvania; that of Great Britain is somewhat greater.

Coke, Edward (1552-1634), a noted English jurist. In the reigns of Elizabeth, James I, and Charles I, he was a lawyer of the crown. He conducted the prosecution against Sir Walter Raleigh, and was engaged in ferreting out the Gunpowder Plot. He was a rough sort of man, not without integrity. He fell into disrepute with the court of Charles for resisting the arbitrary acts of the king. His fame, however, rests on a large treatise in four parts on the law of England. Portions are still used as text books in the law schools of this country.

Colbert, kōl-bêr′, **Jean Baptiste** (1619-1683), a noted French financier. Under Louis XIV, he was for twenty-two years minister of finance. He found an empty treasury and the public revenues spent two years in advance, with fraud, disorder, and theft rampant. He reduced the rate of interest on the public debt, cut the rate of taxation in two, weeded out incapacity and dishonesty, increased the public income by $5,000,000, paid the enormous expense of two years of foreign war, and filled up the public treasury; yet he died out of favor with the king and his spendthrift court. During his management of the public purse, Colbert was liberal and enlightened in the encouragement of the fine arts and the sciences. At his suggestion the Academies of Sciences, of Architecture, and of Painting, the Royal Library, and the Garden of Plants, were given large grants of money. See NECKER.

Cold Storage, a method of preserving perishable goods, such as fruit, dairy products, eggs, and meats, by storing them in a warehouse in which the air is kept at a low temperature by artificial means. The underlying principle to which cold storage owes its success is the important fact that bacteria cannot work in the cold, and that in consequence decay and putrefaction cannot take place in a cold room. Milk and butter keep well surrounded by the water of a cool spring. A cool cellar has a preservative influence. A refrigerator kept cool by the use of ice is a household convenience, especially in the city. A commodious refrigerator has become a necessity to the hotelkeeper. The butcher and the grocer must now provide large refrigerators for the perishable portion of their wares.

Cold storage warehouses are refrigerators on a large scale. Some are cooled by ice, but the immense cold storage plants that have sprung up of late are cooled by means of ammonia without the use of an ounce of natural ice. The reader may have noticed on a hot day that a little water sprinkled on the floor cools off a room delightfully. This is due to the fact that in evaporating or drying up, as the water on the floor quickly does, a great amount of heat is taken from the air of the room, leaving it cool. On somewhat the same principle ammonia is used to produce frost in a cold storage warehouse. It is evaporated in a system of pipes through the center of which run inner pipes containing a brine made of calcium chloride and water which becomes intensely cold without freezing. That is to say, the pipe of brine is surrounded by a larger pipe in which ammonia is evaporated, with the result of taking the heat out of the brine, and leaving it intensely cold like

that in an ice cream freezer. The cold brine is forced through a second system of pipes somewhat like a steam heating system, suspended usually on the walls, or to the posts that support the floors of the various rooms of the warehouse. By governing the flow of brine, a room may be chilled simply, or it may be made so cold, even on a hot midsummer day, that its contents freeze solid. Both the brine and the ammonia are used over and over, like the steam in a heating plant. In an efficient plant or system, a ton of coal will furnish the power requisite to produce a cooling effect equivalent to that of from eight to fourteen tons of ice. Ice cannot be handled so efficiently nor so economically, to say nothing of the economy of space and the neatness of the ammonia process. The capacity of an ammonia refrigerating machine is stated in terms of which the cooling influence of a ton of ice is the unit. A five hundred ton machine, such as is used in connection with large breweries and packing houses, is a plant whose cooling capacity may be represented as equal to the effect that might be obtained by bringing 500 tons of ice into the building daily.

Poultry, fish, and game may be frozen solid, in which condition they will keep sound for an indefinite period. Ordinarily meats are kept at or near the freezing temperature. Fruits are placed in a cold, but not freezing room. Eggs are kept fresh in cold storage from two to six months, but it is difficult to keep them from spoiling on account of moisture. Butter keeps well, but must not be frozen. It requires pure air or it will taint.

Cold storage is one of the most satisfactory means of keeping furs. Insects, especially moths, cannot work in the cold. Most large cities now have cold fur storage rooms in which furs may be hung up on hooks and checked till wanted.

Refrigerated cars and ships are now used on a large scale for the transportation of perishable articles. The fruit and vegetable centers of California and the South send their products to market in ice-cooled cars which are refilled with ice by the railway companies at regular stopping places. In the summer season refrigerated cars make regular trips of once a week and upward over nearly all lines of railroad, delivering fresh meats and fruits, and collecting eggs and dairy products. The butcher, grocer, and local merchant regulate their orders and shipments accordingly. The meat raisers of Argentina send their products to European markets in refrigerated ships. A storage house at Dubuque, Iowa, belonging to the Fruit Dispatch Co., is cooled by four miles of pipes. It is capable of receiving a banana train of forty-four cars. The cars stand on track in hot weather and are cooled off after their hot journey from the Gulf. In midwinter the same plant is used to warm up the cars and their contents. About 3,000 cars or $2,000,000 worth of bananas are sheltered in this warehouse yearly.

The transportation and preservation of perishable produce has become one of the most serious problems which can engage the attention of engineers and others interested in the efficacious and rapid dispatch of foodstuffs from one part of the world to the other. Statistics and statements from high authorities go to show that the transport and preservation of perishable produce is an enormous and growing business, and likely in the future to be one of the most important in the world.

In spite of the careful fostering of home industries intended to provide the food supply of the United Kingdom, the imports of provisions are regularly increasing. Instead of drawing on near-by countries, the English people are looking more and more to their colonies in distant parts of the world for these supplies. This is made possible by the present methods of refrigeration.

There are 358 ships engaged in the trade of the United Kingdom that are fitted in part or throughout with a total refrigerating capacity of 36,266,000 cubic feet. Of this number, 71 ships, with a capacity of 3,341,000 cubic feet for perishable produce, bring supplies from the United States; from Australia and New Zealand, 92 ships, with 15,514,000 cubic feet cold-storage capacity, bring chiefly beef, mutton, and butter; from Canada come 47 ships, with 1,829,000 cubic feet capacity, chiefly with meats and dairy products. The number of ships coming from South America carrying refrigerated cargo is not given, but their capacity for this class of goods is placed at 7,611,000 cubic feet.

The port of London is at the head of the list in the number of vessels and their carrying capacity, and takes most of the Australian and New Zealand cargoes, while Liverpool is second and takes most of the North and South American cargoes. However, the shorter trips of the Liverpool steamers bring the yearly sail-

ings and capacity as high or higher than those of London.

As the large quantities of foodstuffs arriving in this country can not be distributed direct to consumers, cold-storage warehouses have increased at the various seaports, in large centers of population, and at the principal distributing markets. The approximate refrigerating capacity of these warehouses in the principal towns varies from that of London, 9,000,000 cubic feet, to that of Hull, 250,000 cubic feet. The total capacity of these warehouses is not far from 23,000,000 cubic feet.

The value of butter imports into the United Kingdom increased from $38,920,417 in 1887 to $108,951,120 in 1907, the largest increase coming from Australia. In meat imports the value increased from $188,160,046 in 1903 to $202,651,818 in 1907. The average annual value of imported fruits, apples, apricots, peaches, oranges, pears, plums, lemons, and bananas for five years, from 1900 to 1904, was $38,086,016, while for the imports of 1907 the value was $45,257,228.—Vice-Consul W. J. Sulis, of Liverpool, in *Consular and Trade Reports.*

Coleridge, kōl′rij, **Samuel Taylor** (1772-1834), an English poet. He was a clergyman's son, and, from his earliest years, a great reader. He admired *Robinson Crusoe, The Arabian Nights,* and other tales of adventure. Orphaned in his ninth year, he was sent to London, where he became a "blue-coat boy" at Christ's Hospital. He seems to have been a precocious lad, who "read right through the catalogue" of a library to which a chance acquaintance had subscribed for him, but who looked with contempt upon his duller comrades. While other boys played football, he loved to dream or watch the drifting clouds. As he grew older, he would discourse occasionally to his mates in the cloisters of the school, or recite Homer in the original Greek, holding them spellbound by his wonderful voice and intonation.

At nineteen he went to Cambridge, but getting into debt carelessly in his second year, he ran away from college and joined a regiment of dragoons. He soon regretted this step, and was bought out of the army by his friends. He returned to college, where he adopted Unitarian and democratic views. He became absorbed in visionary schemes, one of which was to found a model colony on the banks of the Susquehanna. He left college without taking a degree, and began writing prose and verse for the magazines. He became closely associated with Southey and Wordsworth, the three comprising the "Lake School" of poets. Coleridge married early, but with insufficient means. Thereafter he received assistance frequently from his friends. Finally, he weakly deserted the wife and children he could not support, and Southey, who had married Mrs. Coleridge's sister, took them under his care.

For fifteen years Coleridge was a slave to the opium habit, begun by taking the drug in time of illness. Such habit may in large measure account for the failure to fulfill the great promise of his youth. His genius was many sided, but, whatever path he entered, a weak will and a vacillating purpose prevented arrival at the goal. After a severe struggle, and by the aid of a devoted physician, the habit was overcome. During the years left to him Coleridge devoted his time to philosophy and criticism.

Coleridge's personal magnetism, his powerful, if ill-balanced mind, his remarkable gift as a talker, won him many friends. That his faults and failures call for pity more than blame may be inferred from the fact that these friends continued to love and honor him. He seemed to write under sudden inspiration, and, if interrupted, was often utterly unable to complete what he had begun. He said of himself: "The author has frequently purposed to finish for himself what had been originally, as it were, given to him; but the tomorrow is yet to come."

Coleridge's influence on the opinion of the day was prodigious. To his friends, Wordsworth, Southey, and Lamb, his companionship seemed to act as a spur to better work, while Hazlitt, Scott, Poe, Lowell, and many others acknowledge a great debt.

His most important poetical work was done in the year 1798. *The Ancient Mariner, Christabel, Ode to France, Kubla Khan,* and other poems were produced at this time. As he never equalled this work at any other period of his life, this year is called Coleridge's *annus mirabilis,* or wonderful year.

The origin of *The Rime of the Ancient Mariner* is of interest. The two friends, Wordsworth and Coleridge, started on a

walking tour. As they had little money, it was suggested that they produce conjointly a poem for the *New Monthly Magazine,* the proceeds to defray the expense of the trip. On a previous occasion they had planned to publish a volume of verses for which Coleridge was to furnish poems whose incidents and scenes should be in part supernatural, but which should aim to depict faithfully the actual emotions which would be felt should such incidents and scenes be true. They now planned *The Ancient Mariner* to be constructed along these lines. Coleridge told of a dream related by a friend. Wordsworth added a few hints—suggested some lines. That same evening he withdrew from the endeavor. He has himself said, "Our respective manners proved so widely different that it would have been quite presumptuous in me to do anything but separate from an undertaking upon which I could only have been a clog." The poem thus begun in November, 1797, was completed in March following, and was published in *Lyrical Ballads* during the summer. Wordsworth contributed most of the other poems to the volume. *The Ancient Mariner* was most harshly criticized at its appearance, Wordsworth himself attributing to it the failure of the *Lyrical Ballads.* None of Coleridge's friends realized that he had produced an immortal poem.

The tale is wholly imaginative, but the genius of the poet produces the impression of vivid reality. There is something weird in the very opening of the poem. The Mariner stops a man about to attend a wedding and "holds him with his glittering eye," while he relates his story. The wedding guest hears occasionally the music and merriment of the feast; but he cannot leave the old sailor, who is constrained by a "woeful agony" to recount his sin and suffering. The tale is of a ship sailing into southern seas, driven to cross the line by storms, and caught in the ice of the Antarctic regions. An albatross appears, and is welcomed as a bird of good omen. The ice splits and the breeze helps them northward. But the mariner shoots the albatross on a sudden impulse, and woe follows the cruel deed. The ship enters the Pacific Ocean and is becalmed. The dead bird is hung about the sailor's neck by his companions, as a penance for his crime. There is no water to drink and the crew perish of thirst. Then a phantom ship appears, on whose deck Death and Life-in-Death throw dice for the soul of the wretched mariner. Life-in-Death wins. The mariner sees the souls of the dead men leave their bodies; he endures the awful loneliness of the wide ocean; he sees "the curse in a dead man's eye." At last, in an instant of self forgetfulness, he blesses the happy creatures of the deep—the water snakes that play about the ship. That moment the spell begins to break. Sleep refreshes him and there is an element of hope in all that follows. At last he beholds his native land; but he is ever after constrained to wander from place to place, and teach by his tale the lesson of love for all life.

> That moment that his face I see,
> I know the man that must hear me
> To him my tale I teach.

The unusual setting of the story, as well as the ballad meter, simple but artistic, are admirably suited to make impressive the supernatural element introduced into the poem, which would be grotesque, were it less realistic. We must regard the albatross as the keynote of the tale. Six of the seven parts into which the poem is divided end with some reference to this bird.

The versification is varied; the words and phrases felicitous; the melody of the stanzas unsurpassed; while the imagery is so vivid that what we remember seems to be the pictures we have seen, rather than the events that have been narrated.

The following extracts give some idea of this power:

> And we did speak only to break
> The silence of the sea!
>
> As idle as a painted ship
> Upon a painted ocean.
>
> Water, water, everywhere,
> Nor any drop to drink.
> The Sun's rim dips; the stars rush out:
> At one stride comes the dark.

The moving moon went up the sky,
And nowhere did abide:
Softly she was going up,
And a star or two beside—

It ceased; yet still the sails made on
A pleasant noise till noon,
A noise like of a hidden brook
In the leafy month of June,
That to the sleeping woods all night
Singeth a quiet tune.

QUOTATIONS.

Och Clo.—The other day I was what you would call *floored* by a Jew. He passed me several times, crying for old clothes in the most nasal and extraordinary tone I ever heard. At last I was so provoked, that I said to him, "Pray, why can't you say, 'old clothes' in a plain way as I do now?" The Jew stopped, and looking very gravely at me, said in a clear and even fine accent, "Sir, I can say old clothes as well as you can; but if you had to say so ten times a minute, for an hour together, you would say *Och Clo* as I do now;" and so he marched off. I was so confounded with the justice of his retort, that I followed and gave him a shilling, the only one I had.—Coleridge, *Table Talk*.

Doing an evil to avoid an evil cannot be good.

Greatness and goodness are not means but ends.

A dwarf sees farther than a giant when he has the giant's shoulders to mount on.

I wish our clever young poets would remember my homely definitions of prose and poetry; that is, prose,—words in their best order; poetry,—the best words in their best order.

CRITICISMS.

Coleridge suffered an almost lifelong punishment for his errors, whilst the world at large has the unwithering fruits of his labors and his genius and his sufferings.—De Quincey.

The largest and most spacious intellect, the subtlest and most comprehensive, that has yet existed among men.—De Quincey.

He is a wonderful man. His conversation teems with soul, mind, and spirit. Then he is so benevolent, so good-tempered and cheerful, and, like William, interests himself so much about every trifle. At first I thought him very plain, that is, for about three minutes: he is pale, thin, has a wide mouth, thick lips, and not very good teeth, longish, loose-growing, half-curling, rough black hair. But, if you hear him speak for five minutes, you think no more of them. His eye is large and full, and not very dark, but grey—such an eye as would receive from a heavy soul the dullest expression; but it speaks every emotion of his animated mind; it has more of "the poet's eye in a fine frenzy rolling" than I ever witnessed. He has fine dark eyebrows, and an overhanging forehead.—Dorothy Wordsworth.

Of Coleridge's best verses I venture to affirm the world has nothing like them, and can never have.—Swinburne.

To the man himself Nature had given, in high measure, the seeds of a noble endowment; and to unfold it had been forbidden him.—Carlyle.

The most wonderful man I ever knew was Coleridge.—Wordsworth.

Colic, a spasmodic pain in the abdomen dependent upon the irregular contractions of the muscular coat of the intestines. The word is from the same root as is colon, a name used to designate the large intestine. Colic is a symptom rather than a disease. Its causes are various, the most common being irritation resulting from undigested food. Colic may, however, be of a neuralgic character, caused by cold, it may be the result of poison, or it may be the symptom of some affection of the kidneys or bladder. The first remedy for ordinary colic is warmth applied externally. Hot drinks are a relief oftentimes and a full dose of some aperient is indicated.

Colic in infants is very common, often regarded as a necessary accompaniment of infancy. This, however, is not the case. No baby should be allowed to suffer from colic. If he be kept warm and clean, fed regularly, never allowed to suck in air instead of milk from his bottle or spoon and still cries often with colic, there is something wrong with the quality or quantity of his food. No medicine of any sort should be given him, but an experienced physician should be summoned and his advice followed in feeding the child.

Coligni, ko-lēn-yē′, **Gaspard de** (1517-1572), a French admiral. His life fell in the troublous times of the civil war between the Protestant Huguenots and the Catholics. A brilliant career in the wars with Spain raised him to the rank of admiral. He became the leader of the Huguenot party. In an age of the foulest treachery and assassination, and the concealment of ambitious designs behind the veil of religion, Coligni appears to have been the one eminent man of character. Catharine de Medici favored the admiral until she found that he had more influence with her son, King Charles IX, than she relished. She then incited the weak king to authorize a wholesale massacre of all Huguenots on the night of St. Bartholomew. At the appointed hour, when the

Paris mob fell upon the unsuspecting Huguenots, the Duke of Guise, leader of the Catholic party, hurried with armed men to the house of the aged admiral. His followers burst into Coligni's bedchamber, thrust him through with their swords, and threw his body out of an upper window into the street below. In 1562 a Huguenot colony under encouragement from Coligni founded the first white colony on the mainland of North America at Port Royal, South Carolina. The settlers named the country Carolina in honor of the same miserable Charles IX, but they lost the fort and supplies by fire and returned to France. See HUGUENOTS; CATHARINE DE MEDICI; MASSACRE OF ST. BARTHOLOMEW.

Coliseum, also **Colosseum,** one of the famous buildings of ancient Rome. It is also called the Flavian Amphitheater. It was begun by the Emperor Vespasian and finished by Domitian. It is an immense stone structure, oval in shape, surrounding a central arena in which wild beast shows, games, and gladiatoral contests were held. The vast structure covered six acres. It rested on four-score arches. The walls rose 140 feet. They were encrusted with marble and ornamented with four successive orders of columns. Within, marble seats covered with cushions rose tier after tier, capable of seating 80,000 spectators. The dens of the wild beasts were in the basement. The Coliseum was opened to the public during the reign of Titus. Five thousand lions and other wild beasts were slain in the arena during opening games which lasted one hundred days. It is said that during the persecutions of the Christains, entire families were forced into the arena. Wild beasts, purposely left without food for several days, were then introduced, that the spectators might witness the cruel sport of seeing them chase and devour human beings, as cats do mice. Many of the marble seats have been removed for building material, and a portion of the walls has fallen, but enough still remains to give an idea of former magnificence. See AMPHITHEATER.

While stands the Coliseum, Rome shall stand;
When falls the Coliseum, Rome shall fall;
And when Rome falls—the world.
—Byron, *Childe Harold's Pilgrimage.*

The following admirable description of the amphitheatre and its sports is from Gibbon: "The hunting, or exhibition of wild beasts, was conducted with a magnificence suitable to a people who styled themselves the masters of the world; nor was the edifice appropriated to that entertainment less expressive of Roman greatness. Posterity admires, and will long admire, the awful remains of the amphitheatre of Titus, which so well deserved the epithet of colossal. It was a building of an elliptic figure, five hundred and sixty-four feet in length, and four hundred and sixty-seven in breadth, founded on fourscore arches, and rising, with four successive orders of architecture, to the height of one hundred and forty feet. The outside of the edifice was encrusted with marble, and decorated with statues. The slopes of the vast concave which formed the inside were filled and surrounded with sixty or eighty rows of seats of marble, likewise covered with cushions, and capable of receiving with ease above fourscore thousand spectators. Sixty-four vomitories (for by that name the doors were very aptly distinguished) poured forth the immense multitude; and the entrances, passages, and staircases, were contrived with such exquisite skill, that each person, whether of the senatorial, the equestrian, or the plebeian order, arrived at his destined place without trouble or confusion. Nothing was omitted which in any respect could be subservient to the convenience or pleasure of the spectators. They were protected from the sun and rain by an ample canopy occasionally drawn over their heads. The air was continually refreshed by the playing of fountains, and profusely impregnated by the grateful scent of aromatics. In the centre of the edifice the arena, or stage, was strewed with the finest sand, and successively assumed the most different forms. At one moment it seemed to rise out of the earth like the garden of the Hesperides, and was afterwards broken into the rocks and caverns of Thrace. The subterraneous pipes conveyed an inexhaustible supply of water; and what had just before appeared a level plain might be suddenly converted into a wide lake, covered with armed vessels and replenished with the monsters of the deep. In the decorations of these scenes, the Roman emperors displayed their wealth and liberality; and we read on various occasions, that the whole furniture of the amphitheatre consisted either of silver, or of gold, or of amber. The poet who describes the games of Carinus, in the character of a shepherd attracted to the capital by the fame of their magnificence, affirms that the nets designed as a defense against the wild beasts were of gold wire; that the porticoes were gilded, and that the belt or circle which divided the several ranks of the spectators from each other, was studded with a precious mosaic of beautiful stones.

Collar, the neckband of a coat, cloak, gown, or other garment, either standing or rolled over. Separate bands or ruffs of muslin, linen, lace, or fur have been

known for centuries. Various decorative collars are a part of the insignia or regalia of certain orders. Collars of a particular pattern are worn as a mark of dignity by knights, bishops, and others of rank. A hempen collar is a sorry jest for the hangman's rope. The detachable linen shirt collar is said to be an American invention, first made at Troy, New York. The manufacture of Troy collars was begun in 1829 by Ebenezer Brown. Detachable cuffs were made as early as 1845, and the "Troy Laundry" grew up as a collateral branch of business. At first the maker got on by cutting one collar at a time with a pair of scissors and making it by hand. Some of the steps in the advancement of the business that may be mentioned are the cutting of a pile of cloth of many thicknesses at one operation; the use of sewing machines for stitching; and the introduction of buttonhole machines. The business has grown so large that it would now be an impossibility to do the work by hand. The making of collars and cuffs is the most highly centralized industry in the United States. Nine-tenths of American collars and cuffs are made in the city of Troy and less than one per cent are made outside of the state of New York. According to the last census the industry employs 17,115 people, who draw wages to the amount of $5,658,969, annually, and make 10,086,045 dozens of collars and cuffs each year, worth $15,769,132. See LAUNDRY.

College, in educational usage a word of varied application but designating an institution of learning in advance of secondary schools. The word college is Latin and means a body of colleagues. The collegium of Rome was very like what we call now a corporation, and might exist for purposes of trade, religion, politics, etc. The name was applied at an early date to associations of teachers and students drawn together by common interests and common pursuits. Out of this has grown the modern application of the term, but as a result of differing conditions the institutions of learning to which the name is given vary greatly in different countries. Quite distinctive, and of special interest, are American colleges. The early colleges, of which Harvard was the first, were governed by corporations, or bodies of trustees who received their charters from the king. After the adoption of the American Constitution these charters were granted by legislative act. Up to the close of the Civil War the four years' course offered by most colleges, including many subjects now studied in secondary schools, consisted of a single set of prescribed studies leading to one degree, that of bachelor of arts. Today better preparatory schools have enabled colleges to advance their entrance requirements, and to offer several different courses and more extended curriculums. There has been a growing tendency to increase the number of elective studies also. The greater number of colleges grant the degrees of bachelor of science and bachelor of literature, as well as that of bachelor of arts. Some also grant the master's degree for additional work.

There are a few state colleges whose income is derived from taxation. The majority of our colleges, however, are private corporations relying on endowments, many being under the auspices of some religious denomination.

See UNIVERSITY; OXFORD; SECONDARY SCHOOLS.

Collie. See DOG.

Collier, Jeremy (1650-1726), an English bishop. Collier was known in his own time as a bold political writer, but the work whose influence was greatest and has been most lasting was entitled *A Short View of the Immorality and Profaneness of the English Stage.* This pamphlet was an attack upon the writings of Wycherley, Congreve, Dryden, and others. It was the first step in the purification, not only of the drama, but of all lighter literature. Written with both wit and force, it was widely read, and received the support of the moral and thoughtful, although it met, naturally enough, with opposition. Dryden himself gracefully acknowledged its justice.

> I shall say less of Mr. Collier, because in many things he has taxed me justly; and I have pleaded guilty to all thoughts and expressions of mine which can be truly argued of obscenity,

profaneness, or immorality, and retract them. If he be my enemy, let him triumph; if he be my friend, as I have given him no personal occasion to be otherwise, he will be glad of my repentance.—Dryden, *Preface to Fables.*

Collins, William Wilkie (1824-1889), a London novelist. His father was a landscape painter of good repute. The son studied law, but wrote stories. *The Moonstone* is perhaps the best. *Armadale, A New Magdalen, The Woman in White,* and *The Dead Secret,* are others which have been very popular. Several of these were published in American magazines before appearing in book form, and it is said brought their author immense sums of money. Few novelists have enjoyed a wider popularity in their own day than did Collins. His novels can never be regarded as great, however. He lacks the power of making fiction appear as reality. His characters are often unnatural and seem more like actors playing their parts on a stage than like live men and women. For skill in inventing and elaborating intricate plots, Collins is unequalled.

Collodion. See CELLULOSE.

Colocynth, a plant of the squash or gourd family. It is known also as coloquintida, bitter apple, and, by botanists, as *Cucumis Colocynthis.* The plant springs from a perennial root. The foliage resembles that of the cucumber. Like the melon, squash, pumpkin, cucumber, and other members of the family, the colocynth produces two kinds of flowers, one bearing stamens, the other bearing pistils. The fruit resembles an orange in size and color. The rind is thick, light, and spongy. The pulp is exceedingly bitter. There are from 200 to 300 seeds in each fruit. In time of need the Arabs use the seed for food. A coarse oil is pressed from the seeds. The bitter pulp is peeled, freed from seeds, and dried. In this form it is the colocynth of the druggist. It is a drastic purgative, of which an herbalist's book of the eleventh century says: "For stirring of the inwards, take the inward neshness of the fruit, without the kernels, by weight of two pennies; give it, pounded in lithe beer, to be drunk; it stirreth the inwards." In medicine colocynth is given usually with aloes and other drugs. The commercial article is obtained from Spain and Asia Minor. The colocynth ranges from the Cape Verde Islands, through Mediterranean Africa and the Grecian Archipelago and Asia Minor, as far east as Ceylon and India.

Cologne, kō-lōn′, the largest city on the Rhine. It is situated on the west bank of the river in the province of Prussia. The site is about 130 feet above the sea level. Ancient walls in the form of a crescent, with the two ends resting on the river, have been leveled and turned into a series of fine boulevards. A series of fortifications has been constructed in a similar semicircle a little farther out, making Cologne one of the most strongly fortified places in the German Empire. Its principal suburb lies on the east bank of the river, with which it is connected by a long iron bridge, forty-seven feet above the surface of the river, carrying both railroad trains and ordinary traffic. The river is also crossed by means of an interesting bridge of boats. This bridge rests on boats anchored in the stream. The boats in a central section of the bridge are provided with engines and paddle wheels. When a raft of timber from the Black Forest, or a steamer, desires to pass, this section of the bridge is detached and steams out of the way. When the river is clear, it returns and is locked in place, permitting the resumption of traffic.

The city is of ancient origin. When first known it was a town of the Ubii, a German tribe. About 51 A. D. it became a colony or colonia of the Romans, whence its name. During the Middle Ages it was one of the most influential and wealthy cities of the Hanseatic League, carrying on an immense trade with England in wheat, wine, and beer. It was celebrated at an early date for manufactures, still maintained on an extensive scale. Sugar, confectionery, tobacco, malt liquors, mineral waters, vinegar, candles, starch, soap, woolen goods, and the celebrated perfume known as eau de cologne, or Cologne water, are specialties. These give the city a high commercial standing.

The archbishop of Cologne was one of the seven electors who were privileged to select the head of the Holy Roman Empire, the theoretical successors of Charlemagne. A museum of antiquities contains a vast number of drawings, gems, carvings, remains of sculpture, coins, specimens of pottery, and stained glass, dating from the Middle Ages. The town hall in which the merchants of the Hanseatic League used to meet is one of the most interesting in Europe.

Several churches would attract attention, were it not for the Cologne Cathedral, the pride of the city, the greatest Gothic edifice in Europe. The general plan is an imitation of that of Amiens, France. It is built in the form of a cross. The top or front end, called the choir, lies toward the river. The nave or long part extends to the west. This cathedral takes the place of older edifices. The cornerstone was laid in August, 1248. The last capstone was set in place August, 1880, 632 years later. For centuries, 1447 to 1823, no progress was made. The entire edifice is built of light colored stone brought down the Rhine from a quarry on the Drachenfels. The choir was built first. The greater part of the building was erected during the nineteenth century, at an expense of $4,500,000. The total length is 444 feet; breadth of nave, 201 feet; length of transept—the cross portion—282 feet. The main walls are 150 feet high; the height of the roof is 201 feet; the central tower is 357 feet high. The towers that flank the west entrance are 512 feet high, the loftiest in Europe. Seen from a distance this enormous mass of masonry looms up against the sky in a clear cut outline. Seen nearer, it is enlivened by a wealth of flying buttresses, turrets, gargoyles, galleries, cornices, and foliage that give the edifice an air of grace and beauty almost incredible. It is difficult to believe that stone work capable of withstanding the storms of centuries can be made to seem so airy and delicate. The principal portal or doorway is 98 feet high, and 31 feet in width. It is surrounded by statuary. Though of enormous size, the portal seems no more than appropriate for so magnificent a building. The interior is supported by 56 pillars, the largest of which are ten feet in diameter. The choir is surrounded by seven chapels. The windows are glazed with stained glass, representing Biblical subjects. The cathedral bell, weighing twenty-six tons, was cast from cannon captured from the French.

The city is growing rapidly, with a present population of 430,000.

See RHINE; CATHEDRAL.

Colombia, the most northwesterly country of South America. Its neighbors are Venezuela, Brazil, Peru, Ecuador, and the new state of Panama. The government is republican. The boundaries are in dispute on all sides. The area is estimated at 472,000 square miles, or about ten times that of New York. Bogota, the capital, is the largest city of importance. It is situated in the interior, on a lofty table-land, about 200 miles from the Pacific coast and about 300 miles from the Caribbean sea. It is 9,000 feet above the sea and is said to have a climate as delightful as Vermont in September. It is said to be the most beautiful city of South America.

There are about 400 miles of railroad, reinforced by over 8,000 miles of telegraph lines, all owned by the public. There are numerous lines of steamers on the Magdalena River. Barranquilla, at its mouth, is the chief port of the town. The population of Colombia in 1918 was 5,885,077, including 150,000 uncivilized Indians, and perhaps half as many negroes, the latter chiefly on the coast. The language of the schools and of society is Spanish. The influential element is of Spanish descent. The religion is Roman Catholic.

Generally speaking, the country is mountainous. The ranges of the Andes run north and south with intervening valleys. A vast territory of level land lies on the southeast of the Andes, about the head waters of the Rio Negro. Generally speaking, the country is not well opened up. The mineral possibilities are great. There are thirty-two emerald mines, and unknown treasures of gold, silver, platinum, copper, lead, mercury, iron, coal, petroleum, salt, and building stone. Co-

coa, tobacco, vegetable ivory, coffee, dye woods, rubber, vanilla, silver, hides, meats bananas, and tolu are exported in considerable quantities. The merchants of the United States sell Colombia about $4,000,000 worth of cotton cloth, flour, petroleum, and provisions, and buy an equal amount of the productions of that country. The trade with England amounts to about the same. That of Germany and France is less. The metric system was introduced in 1857. Accounts are kept in the gold peso worth about one dollar. United States money circulates freely.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	461,606
Population (1918)	5,888,077
Bogota	121,257
Barranquilla	48,907
Cartagena	36,632
No. departments	19
Members of senate	34
Representatives	92
National revenue	$16,000,000
Bonded indebtedness	$15,000,000
Horses	341,000
Mules	257,000
Cattle	2,800,000
Sheep	746,000
Goats	361,000
Swine	2,300,000
Miles of railway	509
Miles of navigable rivers	1,100
Annual exports	$15,000,000
Emerald output	$1,250,000
Output of gold	$4,000,000
Public schools	2,987
Pupils enrolled	235,000

Colon, kō-lōn′. See PANAMA; PANAMA CANAL.

Color, in physics, a class of sensations made by light on the optic nerve. Light consists of transverse vibrations of so-called "ether." All the vibrations are inconceivably rapid and short, but they vary in rapidity and length. Sunlight consists of vibrations of all lengths. It creates the sensation known as white. Light falling on certain surfaces is wholly absorbed, none of it reaching the optic nerve. This sensation, or lack of sensation, is known as black. White and black are not regarded as colors. If white sunlight be caused to pass through a prism, the waves are sorted or grouped, or, better yet, arranged in order of shortness and frequency.

No doubt there are waves that are too short and too frequent to create a sensation on the nerve of the human eye. For aught we know, the eye of beast or insect or bird may experience delicate sensations of color unknown to man. However that may be, the shortest and most rapid waves known to the human eye are called violet rays. We are virtually certain that there are light waves too long, too slow, to excite the optic nerve. It may be that certain animals see light that our more delicate optic nerve cannot detect, but, be that as it may, the longest and slowest waves that are noticeable to the human eye are known as red waves.

Between the extremes of violet and red there may be an imperceptible graduation. The eye recognizes an almost infinite number of colors, shades, and tints, but seven seemingly distinct colors attract particular attention. If a ray of white light be decomposed by a prism into a band of colored light known as the color spectrum, the eye recognizes seven unmistakable colors — violet, indigo, blue, green, yellow, orange, and red. The initials of these spectrum colors spell *vibgyor.*

The seven colors of the spectrum are called popularly the primary colors, but the term is used otherwise by scientists. It has been found, for instance, that yellow of the spectrum may be resolved into red and green, and that spectral red and green, combined, form yellow. Spectral red, green, and violet cannot be resolved into other colors. They are called, therefore, the primary spectral colors. In the case of pigments—coloring materials—it is found that blue is a primary color. As we deal with pigment colors, rather than spectral colors, red, green, and blue are considered the primary colors.

If the primary colors of the spectrum be painted on a disk, a sector to each color, and the disk be rotated rapidly, the colors blend into a white or gray. Colors that blend to form white or gray are called complementary; thus the primary colors are complementary. The term is applied more frequently, however, to a pair

of colors that blend to produce white or gray. Such pairs of spectral colors are red and green-blue, orange and blue, yellow and indigo-blue, green-yellow and violet. In mixing dyes, however, it is found that blue and yellow are complementary. A color darker than standard is called a shade; a color lighter than standard, a tint. Thus we have a standard blue, and a series of shades of blue, and a second series of tints of blue. At one time, it was held that an eye for color was distressed by placing any but complementary colors together. The modern milliner, however, claims that, by selecting the proper shades or tints, any colors may be combined without offending correct taste.

The analogy between harmony in color and harmony in music is close. The wave length of red is about double the wave length of violet. Color bears the relation to light that pitch bears to sound. Violet is an octave higher than red in the scale of colors. The visible colors comprise but an octave. The waves shorter than violet are known as ultra-violet; those longer than red are known as infra-red. The entire scale from the lowest infra-red to the highest ultra-violet is perhaps seven light octaves.

The following table gives the standard wave lengths. The unit is the micron, or 1/1000 of a millimeter.

Ultra-violet (invisible)	.180000
Violet	.396800
Indigo	.429300
Blue	.486151
Light green	.527052
Yellow	.589618
Orange	.656307
Red	.688411
Dark red	.762131
Infra-red (invisible)	.30.000000

As stated elsewhere, the list of colors is well nigh endless. Chapman's color chart for the identification of the plumage of birds contains thirty colors.

A red wall surface is a surface that absorbs all other rays and reflects red rays. A red pane of glass in a stained window is a pane that stops all other rays and allows the red rays to pass through. Green goggles stop all but green light, the color that is easiest on the eye. Wall papers should be chosen not only for harmony of color, but with reference to the demand for light. Yellow reflects three times as much light as dark brown. If a room be too light, vermilion and green and black will soften the glare; if a room or passage be deficient in light, yellows and white are to be preferred.

The power of various colors and surfaces to reflect light is shown in the following table, which gives the percentage of the total incident light that is reflected:

Mirror	95
White blotting paper	82
Chrome yellow	62
Orange	50
Yellow	40
Pink	36
Emerald green	18
Dark brown	13
Vermilion	12
Black paper	0.5
Deep chocolate	0.46
Black velvet	0.4

Students of nerve diseases have investigated the effect of color. The name of chromatography has been given to the new science based on the effect of color on the human body. It has been found that red is an excitant; that orange and yellow also excite, but in a less degree. Violet, indigo, and blue have a calming effect. Green excites a feeling of pleasure and then a sense of peace. According to the conclusions of the scientists, the various colors affect blonde people more than they do brunettes. Fleshy patients are more susceptible to the effects of colored lights than are spare patients. Nervous people should avoid living in rooms papered or draped with red. Violet, green, and blue are colors to be preferred.

See SMALLPOX; CANCER; LIGHT; FINSEN.

Color Blindness, a defect in vision, either an insensibility to color at all or an inability to recognize certain ones. Red blindness or green blindness are the most common, in either case those colors appearing as yellow. The explanation is that those portions of the retina which respond to the wave-lengths of certain colors are either absent or diseased. Continual straining of the eyes in the effort to distinguish red and green lights on the part

of trainmen sometimes leads to insensibility to these colors. A careful series of tests with colored worsteds must be undergone by any one wishing to enter the railway service where the interpreting of signals is necessary. The discovery of color blindness is said to have been made by John Dalton, the famous chemist, who was himself a victim, which led to this defect being called Daltonism.

Colorado, a state of the American Union. It was admitted in 1876, and is known as the Centennial State. It lies four square, and is bounded by four straight lines. It is included between the 37th and 41st parallels. The eastern line follows the 102d meridian, and the west line the 109th meridian. The northern boundary is shorter therefore than the southern boundary. Colorado and Wyoming are the only states in the Union that are bounded by four straight lines. The area is 103,925 square miles.

The Plain Region. That eastern third of the state, or that part east of the Rocky Mountains, is a part of the great treeless plain of North America. It is divided into two sections. The northern part lies in the upper valley of the south Platte, the southern, in the valley of the Arkansas. The soil is fertile, but insufficiently supplied with moisture. Dust blanket cultivation has done much for the country. The waters of the mountains have been utilized to convert large areas in the valleys into alfalfa meadows and orchards, but the supply is limited. The state has but 280 square miles of water. Large areas are still waiting for man to devise a way of obtaining water, all that is needed to render them enormously productive. The lowest point in this section is 3,047 feet above sea level.

The Mountain Region. The western two-thirds of the state is in the heart of the Rocky Mountains. There are 200 peaks over 13,000 feet high, including the highest in the United States, if we except Mt. Whitney of California. One of the most noted is Pike's Peak in full view of Denver. The Main Rockies traverse the state from north to south in two lines or ranges that separate and approach again, inclosing great valleys shaped like links in a chain. Named from the north, they are North Park, Middle Park, South Park, and San Luis Park. South Park, the smallest of the four, is 8,000 feet high, and is as large as Rhode Island. In addition to these, there are many smaller parks to the westward, some of them as large as an ordinary Illinois county. Among these are Monument Park and the Garden of the Gods. The latter is near Colorado Springs, and is so called from the countless number of water-worn monumental pillars.

River Systems. Colorado shares honors with Wyoming and Minnesota as the source of the head waters of river systems. The Platte and the Arkansas have been mentioned. They carry the waters of eastern Colorado to the Mississippi. The waters of the western section go by way of the Grand Cañon to the Gulf of California and the Pacific Ocean. San Luis Park is drained by way of the Rio Grande into the Gulf of Mexico.

Scenery. Colorado is famous as a scenic state. Towering mountain peaks, terraces, gorges, and cañons a mile deep, mesas, waterfalls, sculptured rocks, fertile valleys, and upland forests give a variety of impressive scenery. Compared with Colorado, Switzerland is a mere suggestion. The air is bracing and unsurpassed, whether for pleasure or for health. The mountains of Colorado are now the greatest inland resort in the world. Few parts of the world give the observer a larger idea of the greatness of the universe.

Minerals. The mineral wealth of the state is beyond computation. Its deposits of gold, silver, zinc and lead exceed those of any other state. It has extensive deposits of iron and copper, and leads the states west of the Mississippi in value of its coal and petroleum. Clay and building stone are found in inexhaustible quantities. The radium-bearing mineral, carnotite, occurs in Paradox Valley. In 1918, $2,500,000 worth of radium was produced from this ore. The yearly mineral output of the State exceeds $100,000,000.

Industries. As might be expected the leading manufactures of the state are the

smelting and refining of ores, making of steel rails, and foundry products. With timber and iron at hand, a carbuilding industry has grown up. Flour milling, meat packing, and brewing are large industries.

AGRICULTURE. About two-thirds of the total area of the state is available for grazing and farming. About three-fourths of the lands under crop, or over 1,600,000 acres, are irrigated. The largest irrigated tracts are in the vicinity of Greeley and in San Luis Park. It is thought that the irrigated area can be more than doubled. Over $10,000,000 worth of alfalfa hay is produced on these lands. Wheat, potatoes, and sugar beets of superior quality are now important crops. Peach, pear, and plum, and especially apple orchards are well established in the irrigated valleys. The Arkansas valley is famous for muskmelons, which are shipped in carloads to the city markets. Thousands of cars of Rocky Ford melons are shipped yearly.

Stock raising and dairying are important and growing interests. The long-horned Texas cattle that took care of themselves in winter have given way largely to improved breeds. The production of milk, butter, and cheese has kept pace with the increase in the production of hay.

EDUCATION. An excellent system of public instruction includes common schools, high schools, a normal school at Greeley, a school of mining at Golden, an agricultural school at Fort Collins, and a university at Boulder. Money is plentiful and is spent for schools ungrudgingly.

THE FRANCHISE, POPULATION, ETC. Women vote on an equality with men and are eligible to all offices. Many are county superintendents of schools. The population in 1920 was 939,376, very largely of American birth. A map of the state shows that the counties, especially in the western part, are as irregular in outline as the state is regular. The boundaries follow the natural mountain ranges that surround the parks. A number of county names are suggestive. Boulder, Cheyenne, Custer, Delta, El Paso, Kit Carson, Mesa, Mineral, Park, Pueblo, and Yuma are far more expressive than the names of presidents or railroad magnates never identified with the locality. The metropolis of the state is Denver, reserved for a separate article. Pueblo, Leadville, and Cripple Creek, are mining towns; Colorado Springs and Boulder are health resorts. Pueblo is called the Pittsburg of the West. Denver is the capital.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, in square miles	103,925
Population (1920)	939,376
Denver	256,369
Pueblo	42,908
Colorado Springs	29,572
Boulder	10,989
Trinidad	10,906
Greeley	10,883
Fort Collins	8,734
Number of counties	59
Members of state senate	35
Representatives	65
Salary of governor	$5,000
U. S. representatives	4
Presidential electors	6
Assessed valuation of property	$414,885,770
Total indebtedness	$1,130,300
Corn, bushels	3,267,000
Wheat, bushels	8,721,000
Oats, bushels	7,448,000
Wool, pounds	9,860,000
Horses	280,000
Mules	12,000
Milk cows	161,000
Other cattle	1,500,000
Sheep	1,729,000
Swine	248,000
Acres of sugar beets	90,000
Railways, miles	5,360
Manufacturing establishments	1,606
Capital invested	$107,600,000
Operatives	21,813
Raw material	$63,000,000
Output of manufactured goods	$100,000,000
Gold mined	$22,800,000
Silver mined	$5,400,000
Copper, pounds	14,000,000
Coal mined, tons	9,634,900
Iron ore mined, long tons	10,176
Petroleum, barrels	379,653
Mineral products	$71,000,000
Quarry products	$869,000
Teachers in public schools	5,500
Pupils enrolled	162,660
Percentage of male teachers	20
Average annual expenditure per pupil	$50.14

Colorado River, one of the great streams of North America. It is formed by the junction of the Green, whose head waters rise in Wyoming, and the Grand, whose head waters rise in Colorado. It flows

southwesterly through Utah, Arizona, Nevada and Mexico, receives the Gila, and empties into the Gulf of California. The Green emerges from a series of cañons, 1,500 feet deep. The main Colorado passes through four cañons, the Marble Cañon, 60 miles in length and 3,600 feet deep; the Grand Cañon, 200 miles long and from 4,000 to 7,000 feet deep—the greatest cañon in the world; the Callville Cañon, 7,000 feet deep, with terraced cliffs piled with the ruins of cities; and, lastly, the Black Cañon, 25 miles long and 1,000 to 1,500 feet deep. The lower 612 miles of the river, including the Black Cañon, are navigable for steamers as far as Callville, Nevada.

These great cañons have been cut by the current. Particles of sand in the swiftly running water have chipped off the sandstone like chisels, and worn channels, in places a mile and a half deep. Clear water free from grit has little erosive or scouring power. Many other rivers in the world have worn still deeper channels; but their cliffs have been worn down by rain, so that, instead of a narrow gorge, a wide valley has been formed. The wonderful cañons of the Colorado are in a well nigh rainless region. The cliffs stand much as when left by the current of the river. To those fond of statistics, it may be said that 750,000,000,000,000 cubic feet of rock have been chiseled out and carried away by the Colorado River. At the rate at which sediment is now carried by the current, 10,000,000 years would be required to do the work.

Of late the Lower Colorado has given the Southern Pacific Railway trouble by leaving its banks and flooding a large, low area, known as Salton Desert. The mouth of the river is a vast mud delta in which the Indian sows his September seed.

See GRAND CANYON; SALTON SEA; IRRIGATION.

Colorado Springs. Thousands of tourists visit the city of Colorado Springs every year for the superb mountain scenery amidst which it is located, going from there to the medicinal springs at Manitou nearby. The city is sixty-five miles south of Denver, and has an altitude of 5,982 feet. Colorado College is located there and the State Asylum for the Deaf, Dumb and Blind. It is a railroad center but has no manufactures. It is perhaps the most noted resort on the continent for those suffering from pulmonary complaints. One of the largest fraternal insurance companies has successfully maintained here for several years a camp for its members afflicted with tuberculosis. The population in 1920 was 30,105.

Colossus, in ancient art, a statue of great magnitude, whence our adjective colossal. The most celebrated colossus of antiquity, the existence of which has been doubted, however, was a bronze statue of the sun-god at the entrance of the harbor at Rhodes. The work occupied the sculptor twelve years. It was designed to serve as a lighthouse. It stood 70 cubits, or about 105 feet high. According to an unfounded tradition this statue straddled the harbor, so that ships passed in and out between its legs. It was overthrown by an earthquake 234 A. D. In 653 it was sold by the Arabs for $260,000 to a Jew for old metal. A colossal statue of Zeus in the Parthenon was 60 feet high. One of Athena was 39 feet. The largest statue in the United States is that of Liberty Enlightening the World, 151 feet high, on Bedloe Island, in the harbor of New York.

See LIBERTY; BINGEN; MENNON.

Colt, Samuel (1814-1862), an American inventor. He was educated in his father's cotton mill at Hartford, but went to sea at an early day and became interested in firearms. Starting with an idea of the sixteenth century, he perfected a pattern for the first really practical pistol having a revolving barrel with a number of bores. Colonel Colt patented his revolver in 1835 and commenced its manufacture at Hartford. He built up one of the largest firearm factories in the world. In the earlier patterns the entire barrel revolved. Later he devised a plan of a breech having a short revolving cylinder, usually of six chambers, with but a single barrel. At first the cylinder was turned by hand. Later it was connected by a revolving mechanism with the hammer, so that in cocking the pistol a new chamber came into line with the barrel.

See FIRE ARMS.

Columbia, a large river on the Pacific coast of North America. Its rivals are the Yukon and the Colorado. It is credited with a total length of 1,400 miles, and a basin area of 300,000 square miles. Through its tributaries, including the Kootenai, the Clarke, and the Snake, it drains the greater part of Oregon, Washington, Idaho, and a part of British Columbia, Montana, and western Wyoming. On the south, it drains the borders of Utah and Nevada. Its head waters mingle with those of the Fraser, the Saskatchewan, the Missouri, and the Colorado. There are divides where the tourist can throw a dipper of water one way into the drainage basin of the Atlantic, or the other way into the drainage basin of the Pacific. The mouth of the river was entered by Captain Gray in 1792. The valley was explored by the Lewis and Clark expedition in 1805. The mouth of the river forms an estuary separating Oregon and Washington. It is about thirty-five miles long, and from two to seven miles in width. A sandbar at the ocean entrance has been scoured out through the construction of government jetties. The national government has spent also about $4,000,000 in constructing a canal and lock at the Cascades, about 200 miles from the ocean. A similar work is under way at the Dalles, 150 miles farther up. It is estimated that these improvements will open up over 2,000 miles of navigable waters to steamers from the Pacific. The Columbia has long been noted for its salmon fisheries. Half a million cans of the best salmon in the world are put up on its banks annually. See CASCADES; PORTLAND; SALMON; OREGON; WASHINGTON.

Columbia, the capital of South Carolina and county seat of Richland County. It was devasted by fire on Sherman's march to the sea in 1865, but by 1920 had a population of 37,524, with many handsome buildings, among them the capitol and other state buildings, a hospital, and a public library. It is the seat of a number of preparatory schools and colleges, three of which are for negroes. The University of South Carolina is also located there.

Columbia University, an institution of higher learning in New York City. It was founded by the colonial authorities, the Church of England taking the lead. The first money was raised by public lottery. The first principal assumed office July 17, 1754, in the schoolhouse belonging to Trinity Church. He had eight students. A royal charter was granted on October 31st of the same year, the institution taking the name of King's College, providing that the balance of control should rest with the Episcopal church. This clause was later stricken out. As a matter of fact, King's College was noted for catholicity of spirit from the very beginning. When the Revolutionary War broke out the students pulled down the statue of King George that stood on the campus, and entered Washington's army. May 1, 1774, college work was resumed, the legislature of New York having changed the name to Columbia College. Columbia University, as the institution is now known, consists of faculties of law, of medicine, of philosophy, of political science, of pure science, and applied science. It has also a college of physicians and surgeons, Barnard College for women, a school of mines, and a teachers' college, the latter a high-rank professional school for teachers. The governing body of the university consists of twenty-four trustees who fill vacancies in their own membership. Columbia Library contains one-third of a million bound volumes. The building itself is a gift from Ex-President Low, who expended over a million dollars in its erection. There are between 5,000 and 6,000 students in attendance.

Columbian Exposition. See WORLD'S COLUMBIAN EXPOSITION.

Columbine, a fragrant honey-bearing flower of the buttercup family. This delightful flower is often called a honeysuckle, a shrubby plant to which it is not related. The American columbine blooms in May and June. The flowers grow on a woodland perennial herb two feet high. The five petals are, all alike, prolonged backward into straight honey-bearing spurs. The flowers are of a handsome delicate scarlet outside and yellow inside. They are pendant or nodding at first, but straighten up when they go to seed. The

Rocky Mountain columbine has incurved spurs. It is blue or purplish, or even white. The garden columbine of Europe is the flower to which Jean Ingelow says:

> O Columbine! open your folded wrapper,
> Where two twin turtle-doves dwell.

The Scotch call these flowers "auld ladies' mutchie," or caps.

Admirers of the columbine have urged its adoption as our national flower. They claim that the common name is derived from columba, a dove, the bird of peace; that it suggests Columbus, the discoverer of America; that its Latin name, *aquilegia,* is derived from the name of the eagle, the bird of America; that the flower would lend itself readily to artistic designs; that the shape of the flower suggests a liberty cap; and, finally, that the columbine is widely dispersed and universally beloved by children and all lovers of flowers.

Our columbine is at all times and in all places one of the most exquisitely beautiful of flowers; yet one spring day, when I saw it growing out of a small seam on the face of a great lichen-covered wall of rock, where no soil or mould was visible,—a jet of foliage and color shooting out of a black line on the face of a perpendicular mountain wall and rising up like a tiny fountain, its drops turning to flame-colored jewels that hung and danced in the air against the gray rocky surface,—its beauty became something magical and audacious.—Burroughs, *Riverby.*

Columbine. See HARLEQUIN.

Columbus, the capital city of the state of Ohio. It is situated on the Scioto River, at the geographical center of the state. The site is a level river plain. The general plan of the city is that of a Maltese cross, extending east and west seven miles; north and south, eight miles. These arms are traversed by two main thoroughfares, High Street and Broad Street, intersecting each other at right angles in the center of the city. They are planted with avenues of shade trees. At their intersection is a magnificent park of ten acres, called Capitol Square. The capitol building itself is a two-story structure surrounded by a colonnade of Doric columns, extending from the pavement to the roof. It is built of native gray limestone, and cost in the neighborhood of $3,000,000. With additions, it covers nearly three acres. The site of Columbus was selected in 1810; the city was surveyed in 1812; and the capital was removed thither from Chilicothe in 1816. Among other public institutions, the state university, a state hospital for the insane, schools for deaf mutes, blind, and imbecile, as well as the state penitentiary, are located here.

Though designed as a residence city, Columbus has developed into a large manufacturing and distributing center. There are eighteen railroads. One of the largest carriage factories in the United States is located here. In all about $40,000,000 is invested in steel plants, iron works, and the manufacture of carriages, automobiles, trucks, cars, watches, furniture, cash registers, farm implements, hosiery, medicines, and other articles of merchandise. The annual output is considerably over $100,000,000. Columbus lies within the gas belt. The city is piped. Natural gas is used for heating, cooking, and manufacturing. An abundant supply of soft coal is found in the vicinity. The population in 1920 was 237,031.

Columbus, Christopher (1446 (?)-1506), the discoverer of America. He was born at Genoa in 1446 and died at Valladolid, Spain, May 21, 1506. The Italians called him Cristoforo Colombo; the Spaniards, Christobal Colon. His father was a Genoese wool comber. Beyond the facts that he received a good education, was fond of mathematics, geography, and travel, and that he went to sea early in life, little is known of young Colombo. In 1470 he married a sea captain's daughter at Lisbon, then the most enterprising seaport in the world. Columbus appears to have inherited a lot of charts and instruments belonging to her father. He mastered books of travel, studied the various theories of the shape of the earth and investigated the traditions of new lands in the west.

The Turks had intrenched themselves about the eastern end of the Mediterranean, cutting off former lines of traffic by ship and caravan with India and the far east. The southern route by way of the Cape of Good Hope was unknown. The ships of the Mediterranean lay rotting at the wharves. Merchant princes had empty warehouses. People long accustomed to the

products of the east went without. The profitable commerce of centuries, thus interrupted, was seeking new lines of travel, not controlled by the Turks. The Portuguese emboldened by the mariner's compass, lately come into use, were seeking a passage around the southern end of Africa. Columbus was of the opinion that a route directly westward would lead to India. Filled with the great idea, he made application to his native city, Genoa, to John II of Portugal, and to Henry VII of England for money and ships to make a trial voyage. He passed eighteen years in a struggle with poverty, striving to overcome ridicule and opposition. Finally—call it credulity, faith, or statesmanship—a woman, Isabella, queen of Spain, one of the most gracious personages in history, listened to his plea and declared that so great a project should be carried out, even though she were obliged to pawn her jewels to find the means.

Friday, August 3, 1492, Columbus set sail from Palos, Spain, with three small ships, the Pinta, the Nina, and the Santa Maria. He went by way of the Canary Islands, where he took aboard a last supply of fresh water and sailed boldly forth into unknown waters. Terror seized his sailors, and nothing but his commanding presence and skillful management prevented their throwing him overboard and returning home. The picture of Columbus —anxious, fearless, determined—explaining his views to his officers, watching every floating bit of grass or weed, but sailing on and on over pathless waters and under strange skies, is an inspiring theme. Finally birds were seen, and the prows of the little ships were turned to follow. The smell of growing trees seemed to be wafted from the west. Columbus offered a reward to the first to see land. He himself was the first to sight a twinkling light over the waves. At two o'clock on the morning of October 12th, sixty-nine days after their setting out, a cannon shot from the Pinta announced the sight of land. It is no wonder that on landing Columbus threw himself on the ground, kissed the very earth, and returned thanks for the coming true of a lifetime of hope and prayer. Then, drawing his sword and raising aloft the banner of Spain, he took possession of a New World in the joint names of Ferdinand and Isabella, sovereigns of Castile and Leon.

The first land discovered was the island of San Salvador, one of the Bahama Islands. Columbus built a wooden fort, and left thirty-nine volunteers to hold it. He also visited Cuba and Hayti before returning.

When Columbus set sail from Palos the courtiers jeered at his wild scheme, the populace wept and bewailed the fate of friends who should never return, and many a curse was hurled at the head of so harebrained and wild an adventurer. On his return the same people could not cheer loud enough; bells were rung; cannon thundered salvos of welcome. Columbus and his companions were conducted to their sovereign in procession. Indians, palm trees, fruits, all sorts of specimens from the new country were carried along in view of the excited people. A chair for Columbus was placed next the throne of the king, and he was invited to relate his adventures. There was no difficulty in getting a hearing from Ferdinand now. Columbus was made viceroy of the New World and made three additional voyages to explore and to locate forts. Believing he had found India, he called the region the West Indies, and the natives Indians.

It would require volumes to relate the troubles that befell after the first flush of success had passed by. Envy, greed, and calumny assailed him. Some wanted the gold there might be in a new country, others coveted the possession of the New World. To Ferdinand they represented that Columbus designed to create and rule an independent empire beyond the sea. To Isabella they drew a picture of cruelty to the Indians. As a result orders were given. Columbus was sent home in chains like a dangerous criminal. Once face to face with the queen, we may believe he had no difficulty in clearing his good name. None the less, he died broken-hearted at Valladolid, desiring that his chains be placed in his coffin. According to his wish, his remains were transported to the city of Santo

Domingo, which his brother had founded. When, in 1795, the city with the island became a possession of France, the coffin of Columbus, as it was supposed, was removed with every sign of high honor to the Cathedral of Havana. In 1898, when Cuba was granted independence, the remains were taken to Spain. They now rest beneath the pavement of the grand old Cathedral of Seville. A marble slab bears the famous inscription, "To Castile and Leon, Columbus gave a new world." Historical accuracy requires the addition of a statement to the effect that in 1877 a lead casket was found in the old monastery at Santo Domingo that is thought to contain the true remains of the great discoverer. It is believed quite generally that the body removed was that of his son, and that Columbus still reposes at Santo Domingo, the resting place of his choice.

Documents recently brought to light in the archives of Genoa indicate the poverty of the famous expedition. The great admiral was paid a salary of $300 a year. The two captains who accompanied him received a salary of $200 each. The members of the crew were paid at the rate of $2.50 a month. The fleet was worth about $3,000. The entire expense of discovering America did not exceed $7,000,—less than the cost of a mere salute fired nowadays by a battleship in honor of the president.

Columbus was a man of pure life, a scholar, an enthusiast, a man of large views, integrity of purpose, sagacious, enterprising, persistent, and possessed of executive ability in no ordinary degree. He lived in an atmosphere of ignorance, prejudice, and selfishness, to say nothing of malice and the blackest treachery. His life is the record of a great man, thwarted and denied a free hand by authority, pestered by petty foes, and hunted to death by powerful ones. The best account of his life and services likely to be at hand is to be found in John Fiske's *Discovery of America.*

Column. See ARCHITECTURE.

Comanche, kō-măn′chē, a tribe of American Indians belonging to the Shoshone or Snake family. When first known to the whites they were living in eastern Colorado, where they had already obtained horses of Spanish stock from the southwest, and had become expert and daring riders. They were driven southward by the Sioux into the region lying between Santa Fé and Mexico. They were armed with the bow and arrow. Later the Comanches obtained firearms from the whites. They lived largely on the chase of the buffalo, from the skin of which the squaws constructed their wigwams. There were at one time at least 20,000 of the tribe, perhaps more, as the number of warriors was estimated at 5,000. The Spaniards had a knack of making peace with most Indian tribes; but they were at constant enmity with the Comanches, who bore down upon their settlements along the Mexican borders in many a raid, killing the adults and carrying away the children for adoption. About 1816 smallpox played havoc with the tribe. When the railroads reached their country the Comanches became a perfect scourge and gave the United States troops much trouble. A small remnant, perhaps 1,500 in all, is now located on a reservation in Oklahoma. See INDIANS; APACHE; MILES.

Comb, a well known instrument used in the care of the hair. A comb is a thin strip of any stiff, tough material, furnished with teeth. Several metal strips are set on a frame to make the curry comb used for animals. Toilet combs are straight. Curved combs of many shapes are used to hold a woman's hair in position. The combs of the ancients seem to have been made of wood, chiefly boxwood, and later of ivory. Modern combs are made in a variety of ways. Tortoise shell is heated until it is plastic, when the spaces between the teeth are punched out. Bone combs are first shaped. All the teeth are then cut at the same time by a number of circular saws running side by side on the same axis. Celluloid and metal combs are cast. Rubber combs are pressed into molds while soft and are afterward hardened by vulcanization. In stamping out combs material is saved by having the teeth interlock. According to the latest statistics 34 American comb factories employ 1,399 people, and pay them $572,467 a year. The annual

output is worth nearly $2,000,000. We also import many combs from abroad where they are made cheaply. See HAIR; BARBER.

Combing. See CARDING.

Combustion, ordinarily used as synonymous with burning, is the union of a substance with oxygen, accompanied by the evolution of heat and light. In a wide sense, it may signify any chemical action with like result. The combination may be a slow one, as when phosphorus is slowly consumed in the air, or more violently when a flame is applied to it. The result, as far as the total amount of heat is concerned, is the same, the difference in temperature causing the light in the one case and not in the other. The slow invisible union of a substance with oxygen is called oxidation. The rusting of iron is a familiar example. Combustion usually results in a gas and a solid residue. Experimentation has shown that though a body may seem to be destroyed the matter is merely changed in form, for the weight of the resulting gas is the same as that of the substance burned plus the oxygen used.

Comedy, that department of the drama which appeals to the sense of the humorous or ridiculous. Amusement and fun are prominent features of comedy, and the outcome must be happy, or at least leave a pleasant impression. Horror and grief are elements of tragedy, and the end must be in a measure disastrous. In a broad sense, comedy includes all forms of tragi-comedy, farce, and melodrama. In a more restricted sense, comedy, while separated on the one hand from tragedy, is separated on the other from that which is farcical or grossly comical. Gloom, sadness, and soberness are out of keeping with real comedy; so also is the grotesque and all that is absurdly extravagant. A farce may be classed properly as low comedy. It is the province of comedy proper to satirize in a pleasing way the weaknesses of humanity, the follies of society, or the humorous incidents of life.

As "the history of the Greek stage is the history of dramatic art," we need not go elsewhere to look for the beginnings of comedy. In the Greek colony of Sicily, "to this day the home of spontaneous mimicry," it is said to have arisen. At the vintage festival held yearly in honor of Bacchus or Dionysus, the comus or procession was the principal feature; the word comus signifying a revel continued after supper. The participants went about in carts or on foot, wearing gay costumes and indulging in jovial mirth, interspersed with jests at the expense of the onlookers. A song sung in these processions was called a comus song, or comus ode, whence the word comedy. Susarion, who is called the founder of comedy, and who lived in the sixth century B. C., is said to have traveled from place to place with a small movable stage, holding up to ridicule the follies of the time.

Comedy assumed definite form during the age of Pericles. There are three distinct periods of Greek comedy. The first, called Old Comedy, dates from the establishment of the democracy by Pericles. There was a strong political tendency in Old Comedy, the chief butts of satire being the influential men and rulers of the time. Aristophanes belongs to this period. His best comedies are *The Knights, The Frogs, The Clouds,* and *The Wasps.* It has been said that "were it not for the limitations of the female characters which Greek manners necessitated, Aristophanes would perhaps have been the equal of Shakespeare in comedy." In these old comedies, masks imitating the faces of individuals were worn frequently. Middle Comedy marks the time when heads were busy and tongues were wagging over the opposing schools of philosophy and rhetoric, instead of rival political leaders. Law forbade the name of a living person to be brought on the stage, or the face to be imitated by a mask; so classes, instead of individuals, became the objects of jest. A change also occurred in form. The parabasis or speech in which the chorus addressed the audience, always a feature of Old Comedy, was omitted in Middle Comedy. New Comedy was Middle Comedy matured, and corresponds to the comedy of modern times. Manners and social conditions were now held up to ridicule. Menander is the one notable name in Grecian New Comedy.

Among Roman writers of comedy, Terence and Plautus stand first. Their work was based on the Grecian models and contains little that is original.

From ancient times until the later Middle Ages, there is nothing worthy of note in the history of dramatic literature. When the drama revived it was in the form of miracle plays. These miracle plays were presented in nearly all European countries, and led up to modern comedy; which would seem to have appeared as a result of the natural desire for amusement and variety. The miracle plays were concerned chiefly with religious subjects; but now and then some hint of comedy appeared. In *Noah's Flood* played at Chester, a domestic quarrel occurs before Noah's wife can be persuaded to enter the ark. When she has been pushed and pulled aboard by her children she is so enraged that she belabors her husband until he cries for mercy. Even in the *Play of the Shepherds* some inventive genius introduced a comical sheepstealing scene before the song of angels informs the shepherds of the birth of Christ. Gradually current topics were brought into the dialogues, and characters from real life appeared on the stage. The interlude, introduced by John Haywood to relieve the strain of more serious presentations, contained many of the elements of comedy.

In 1540 appeared the "first play which bears the distinctive marks of real comedy." This is Nicholas Udall's *Ralph Royster Doyster*. It may be said to mark the beginning of modern English drama. Shakespeare is a master of comedy as he is of tragedy. *Much Ado about Nothing* and *As You Like It* are two favorites among his thirteen comedies. Other names worthy of mention as writers of English comedy are Ben Jonson, Beaumont and Fletcher, Congreve, Goldsmith, and Sheridan.

In other countries the origin of comedy has been similar to that in England, although different influences have given it different characteristics. France produced comedies much earlier than England, although the French names most noted in comedy, those of Corneille and Moliere, do not appear until after Shakespeare's time.

In more recent times, comedy has crowded tragedy from the stage. Great tragedies, such as Shakespeare's, presented by great actors, still keep their place, but the popular play is the comedy.

Comedy amuses, corrects, and heartens. It shows that the vanities of life are not final, and the failures not always fatal.—Gayley.

Comedy presents us with the imperfections of human nature; farce entertains us with what is monstrous and chimerical; the one causes laughter in those who can judge of men and manners, by the lively representation of their folly and corruption; the other produces the same effect in those who can judge of neither; and that only by its extravagances.—Dryden.

Comedy of Errors, The, a comedy by William Shakespeare. It was one of Shakespeare's earliest plays, having been produced December 28, 1594, at Grey's Inn Hall. It was first published in 1623. The plot is based on the resemblance between twin brothers, both named Antipholus, and the resemblance between their two servants, also twin brothers, both named Dromio. These likenesses give rise to a series of laughable mistakes. *The Comedy of Errors* is the shortest of all Shakespeare's plays, containing only 1,770 lines. Robson and Crane, American actors, have presented the play with great success, appearing in the roles of the two Dromios.

QUOTATIONS.

Words are but wind.
Every why hath a wherefore.
Headstrong liberty is lashed with woe.
Small cheer and great welcome makes a merry feast.
He that commends me to my own content
Commends me to the thing I cannot get.

Comenius, ko-mē'ni-us, **Johann Amos** (1592-1671), a Moravian educator. Comenius was born in a Moravian village and died at Amsterdam. He became a teacher in his native country, but was driven out by war and religious persecution. He went to Poland and was made bishop of the Moravian Brethren. At one time he contemplated coming to the New World to accept a position in Harvard University. He is remembered chiefly for his *Orbis Pictus,* or the pictorial world, a primary reading book. It is the first in which pictures were employed to assist children in learning to read. Of course the cuts

now seem very rude, but to children of the Old World villages at that time, these were wonderful books. The *Orbis Pictus,* published in 1657, marks a distinct step in education. To be accurate, it was an abbreviation of a larger and more pretentious work, published in 1631. For some idea of the general style of the contents of the *Orbis Pictus,* see article on NEW ENGLAND PRIMER.

Comets, celestial bodies that come from space, pass around the sun and disappear in space again. They are accompanied by trails of light, hence the name which is derived from a Greek word meaning hair. Over eight hundred comets have been studied and listed. Some return with regularity. Others are not expected again. Encke's comet was rediscovered September 12, 1904, at a distance of 107,000,000 miles from the earth. It swept around the sun at the rate of 1,250,000 miles a day, and disappeared in space. Some comets are visible for a week or two, others for months. One has been seen for two years. Some are bright enough to be seen in the daytime; others are visible only at night and by means of a telescope.

Tycho Brahe discovered that comets are celestial bodies outside of our atmosphere. Newton demonstrated that the force which keeps the planets in their orbits controls also the comets. Halley first proved that comets return at regular intervals, or have, as astronomers say, periodicity. Of these, Halley's comet has a period of about 75 years; Encke's, 1,204 days; that of Biela, 6¾ years; that of Faye, 7½ years.

Planets move from west to east; but comets move from east to west. The orbits or paths of planets are elliptical; those of comets take various forms of ellipses or parabolas, usually the latter.

A comet consists of a head, containing usually a more or less condensed portion called a nucleus, and a luminous wisp which always points away from the sun. When approaching the sun, the train streams out behind like hair. When the comet is receding the same imposing light streams out in advance, suggesting a swarm of luminous star dust, repelled by electricity in a direction opposite to that of the sun. The tail is seldom less than 5,000,000 miles long, and in some comets attains a length of 100,000,000 miles.

Comets have been regarded as dread portents of war and pestilence and famine. Milton speaks of a live comet that

> From his horrid hair
> Shakes pestilence and war.

Shakespeare says:

> When beggars die, there are no comets seen;
> The heavens themselves blaze forth the death of Princes.

Astronomers also have felt what now seems needless alarm lest one of these brilliant travelers should collide with the earth. It now appears that no more harm is to be apprehended from the tail of a comet than from the northern lights, while the chance of running into a nucleus is remote, and is unlikely to be attended with serious result. Very possibly a shower of shooting stars would be the only noticeable phenomenon. The density of a comet does not exceed that of the residuum of air left in a first class air pump.

Professor Young answers the question of how it is possible for so light a body to make headway in space, by saying that space is a perfect vacuum offering no resistance to the passage of bodies. He adds the striking statement that if the earth were annihilated save a single feather, that feather would continue to move in the earth's present orbit at a rate of eighteen and one half miles a second.

See METEORITES; STAR; HALLEY.

Commemoration Ode, a poem by James Russell Lowell written in 1865. The full title is *Ode Recited at the Harvard Commemoration.* The poem was written for, and read at, the memorial exercises at Cambridge, in commemoration of those members of Harvard College who had given their lives to their country. This is the finest and most famous ode in American literature. Dr. Burton says: "It should be read by all good Americans at least once a year." We quote:

> How could poet ever tower,
> If his passions, hopes, and fears,—
> If his triumphs and his tears,
> Kept not measure with his people?
> Boom, cannon, boom to all the winds and waves!
> Clash out, glad bells, from every rocking steeple!
> Banners, advance with triumph, bend your staves!

And from every mountain-peak
Let beacon-fire to answering beacon speak,
Katahdin tell Monadnock, Whiteface he,
And so leap on in light from sea to sea,
Till the glad news be sent
Across a kindling continent,
Making earth feel more firm and air breathe braver:
"Be proud! for she is saved, and all have helped to save her."

Commencement, the name given in America to the concluding exercises of the college year, and also used loosely for the graduating exercises of high schools, academies, etc. It is derived from the French verb *commencer,* to commence. The term was first used in the old English Universities, where, upon receiving his degree, each graduate was supposed to commence to teach. The better term was "inception" and the beginners were often called "inceptors" as well as "commencers," but Cambridge used and still uses commencement. From her it was received by Harvard, the oldest American university, and was adopted later by other American colleges. In colonial times the exercises were held in the fall, and often the name has been thought, though mistakenly, to apply to the commencement of the college year. See COLLEGE; UNIVERSITY.

Commerce, the transportation and sale of goods. In a narrow sense it is the carrying of goods to market. An exchange of goods between different parts of the same country is called domestic commerce; that between different countries, foreign commerce. Goods brought into a country are called imports. Goods sent out are called exports. The imports of a country represent its purchases; the exports, sales abroad.

The foreign commerce of the ancients was carried on east of the Mediterranean, chiefly by means of caravans; in Europe by pack trains; between the ports of the Mediterranean, by means of ships. At one time the commerce of the Mediterranean was almost entirely in the hands of the Phoenicians. Tyre, Sidon, and Carthage were important ports. The greatest commercial rivals of the Phoenicians were the Greeks. They were succeeded in turn by the Romans. During the Middle Ages, the commerce of Europe was controlled by the merchants of the free cities, or hanse towns, a great commercial league.

The leading commercial nation of modern times is Great Britain. Germany and the United States were close rivals for second place before the war, with the outlook favorable to the latter. In 1913 the exports were: Great Britain $2,625,000,000; Germany $2,484,311,176. In 1867 England compelled Germany to stamp all goods sold in her markets "made in Germany," because of the outcry against so many German articles sold cheaper but presumed to be inferior to English goods. The people were surprised to find the German articles often the best. The brand became a recommendation and the Germans were keen enough to adopt it as a trade slogan around the world.

In a classification of exports and imports, foods come first—the world's first care is to eat and drink. Counting liquor and tobacco, of doubtful place as foods but gratifying to many appetites, nearly a half of the world's carrying, so far as money value goes, is concerned with supplying the demand for food. Grain, flour, meat, rice, poultry, fish, dairy products, eggs, sugar, coffee, tea, cocoa, spices, salt, dried, canned, and fresh fruits, vegetables, beverages, remedies, and narcotics are the leading items.

The next great class includes articles designed to furnish shelter, comfort, and protection. Here we may place raw cotton, silk, wool, flax, hemp, jute, ramie, and other fibers, as well as cloth of all sorts. Readymade clothing, boots and shoes, and much of the leather belong here. All sorts of hardware used in building houses, lumber, furniture and timber products very generally are designed to shelter and protect. Window glass and paint are protective. Nearly all building material may be placed under this heading. Even battleships, cannon and other munitions of war may be included as protective. Fuel, including coal, kerosene and firewood, is used largely, like clothing, for the comfort of the body.

A third great group of articles may be classified loosely as machinery. Ships,

engines, locomotives, railroad iron, steel and wooden bridges, agricultural machinery and implements, sawmills, windmills, gristmills, tools, cutlery, sewing machines, harnesses and vehicles,—in short, all devices with which to perform work, belong to this class of merchandise.

After food, shelter, and work tools, comes a fourth, as yet a comparatively small group of imports and exports,—those of an intellectual nature. Printing presses, printing paper, and stationery, books, periodicals and newspapers, so far as they are not part of the machinery of commerce, may be placed here. A very considerable part of the world's mail is personal and intellectual. Works of art, including sculpture, paintings, and engravings, may be considered intellectual. In order to bring up the intellectual aspect of commerce as high as possible, it is fair to include jewelry and all articles of personal adornment which are designed less to offer bodily comfort than to give pleasure to the mind. Music and musical instruments belong here. The higher the stage of civilization, the greater the value of this sort of commerce; but, after all, it is the first province of commerce to see that the world is fed.

The following recent statistics are to be regarded as a representative statement of the

IMPORTS AND EXPORTS OF VARIOUS COUNTRIES.

	Imports.	Exports.
Argentina	$275,855,555	$285,837,216
Australia	243,603,310	288,276,826
Austria-Hungary	475,808,863	473,160,653
Belgium	661,718,835	515,700,825
British S. Africa	133,746,224	231,900,283
Bulgaria	24,055,344	24,239,777
Canada	351,879,955	246,960,968
Chile	107,193,877	102,521,466
China	328,957,082	208,860,751
Denmark	149,899,904	105,461,216
Egypt	128,445,224	138,468,981
France	1,167,196,064	1,069,611,790
Germany	2,046,187,150	1,634,803,436
Greece	28,639,886	22,397,531
India, British	442,822,376	562,525,863
Italy	532,774,686	357,337,405
Japan	245,584,575	213,394,963
Mexico	110,324,925	120,883,976
Netherlands	1,068,823,000	883,926,000
Norway	103,369,690	58,952,442
Portugal	65,545,000	31,396,000
Russia	412,355,271	563,866,338
Spain	172,490,612	152,593,410
Sweden	171,076,242	135,146,654
Switzerland	311,659,190	222,509,951
United Kingdom	3,143,292,673	2,074,124,666
United States	1,183,120,665	1,834,786,357
Uruguay	35,595,662	36,346,069
Venezuela	10,335,817	16,203,972

If a careful account be kept, the sum of the world's imports equals the total of exports; for, barring loss at sea and in transit, whatever one country exports, other countries import. As a matter of fact, however, the value placed on articles of import may not be the export value.

As may be seen from the table, the United Kingdom, Germany, the United States, the Netherlands, and France have most to buy and sell. The newer food-producing countries, as the United States, Australia, and for many reasons we must include Russia and India, are larger sellers than they are buyers. The balance of the money coming to them they spend hiring the ships of other nations to carry goods for them and in paying interest on money borrowed to build railroads, or to defray the expense of war.

The United States, for instance, pays large sums to European bankers in this way. Instead of sending actual interest money, we send exports. We are now paying off the cost of our Civil War, and the expense of building the Northern Pacific, the Union Pacific, and other great railroads, by selling cotton, machinery, wheat, and flour. When we catch up we shall become larger buyers—assuredly so, unless our sales fall off.

On the other hand, a few of the old, rich, manufacturing countries buy more than they sell. These are the countries that are loaning the rest of the world money to carry goods and to make improvements. Belgium, the Netherlands, France, and Germany are examples of nations that are greater buyers than they are sellers. The United Kingdom is a great selling nation. British manufactures are offered, we may say, over almost every counter in the world. There is hardly a tribe so rude or remote that the works of Birmingham or Sheffield are not offered in exchange for herbs, ivory, or fur. Yet the balance of trade shows that the United Kingdom is not only a great seller in the world, but

that it is a still greater buyer. So far as foreign markets are concerned, British merchants buy nearly twice as much as they sell. As may be seen from the table, British purchases of foreign foods and material for manufactures, such as cotton and wool, exceed the total exports by over $1,000,000,000 a year. This sum, too large for the imagination to grasp, is earned by loaning money to the newer countries, and by carrying goods for other nations.

A small amount of merchandise is carried yet by caravans and pack trains. Railroads serve as mediums of foreign trade between Switzerland and adjacent states, Russia and Germany, Austria and her neighbors, and in America between the United States and the Dominion and Mexico, as well; but the greater part of the world's foreign commerce is carried on by sea. The beaten sea routes radiate from Great Britain. That from Liverpool to New York, and that from London, *via* Suez, to Singapore and to Hongkong, are spoken of by British writers as the Atlantic Route and the East Route, respectively. Other noted routes are the Cape Route and the Cape Horn Route. The Atlantic is the ocean of commerce. The commerce of the Pacific is of comparatively recent growth. The great seas of commerce are the Mediterranean and the Baltic. The Great Lakes of North America are the most important inland waterway. The Mississippi, the Rhine, and the Danube are possibly the most important commercial rivers. A recent writer states that with respect to mere tonnage the seaports of the world rank as follows: London, New York, Antwerp, Hamburg, Hongkong, Liverpool, Cardiff, Rotterdam, Singapore, Marseilles, Tyne Ports, and Gibraltar.

Reliable statistics of the world's commerce date from 1720. The following totals indicate the rapid growth of international business. It must be remembered that prices change and that the relative volume of shipments is not indicated accurately by a money estimate.

Year.	Total Commerce.
1720	$428,000,000
1780	905,000,000
1820	1,660,000,000
1860	7,246,000,000
1900	20,715,000,000
1910	40,000,000,000

Commerce, Department of, an executive department of the United States government first organized in 1903 as the Department of Commerce and Labor. In 1913 the departments were separated. (See LABOR, U. S. DEPARTMENT OF.) The Secretary of Commerce is at the head of the department and is a member of the President's Cabinet. (See CABINET.) The department includes a number of important bureaus, such as the Lighthouse Bureau, the Bureau of Foreign Commerce, the Bureau of Manufacturers, the Bureau of Census and the Coast and Geodetic Survey.

Commission Government. See MUNICIPAL GOVERNMENT.

Commodore, formerly a naval officer of the United States holding a rank above captain and below rear-admiral. The rank was abolished in 1899.

Common Law. See LAW.

Common Schools. See SCHOOLS.

Commons, in Great Britain, all who are not members of the House of Lords, that is to say, the general people. In a more restricted sense, the term applies to the lower house of Parliament, the members of which are elected by and represent the commons. The House of Commons now consists of 495 members for England and Wales, 72 for Scotland, and 103 for Ireland. See PARLIAMENT; OXFORD.

Commonwealth and Protectorate, The, a name applied to the period of English history between the death of Charles I, 1649, and the restoration of Charles II, 1660. Following the execution of Charles I, the Rump Parliament decreed the establishment of the Commonwealth "without king or House of Lords." A council of state was appointed to have charge of administrative affairs, while legislative affairs were still attended to by the Rump. There were many difficulties to be met in England,—insurrections by royalists and by extreme democrats; rebellions in Ireland and Scotland; foreign war from France and Holland. Under such conditions the Rump Parliament, wholly par-

tisan and unrepresentative of the country, was unfit to deal with the situation. Cromwell, at last in 1653, weary of their bickerings and delay, went to the Parliament accompanied by soldiers, drove out the members and locked the door. After several attempts on the part of Cromwell to secure a working Parliament, the officers of the army drew up the Instrument of Government in which the chief power was vested in Cromwell as Protector of England. Although the document provided for an advisory council and a Parliament, the real power for the remainder of his life was exercised by Cromwell with all the authority of an absolute ruler. Nevertheless, it forms an important period in English history, for, unlike the "divine right" Stuarts, Cromwell exercised his authority for national, not personal, ends. Insurrections were crushed; the rebellions in Scotland and Ireland were put down, the latter, many think, with inexcusable ferocity; foreign war was successfully carried on, and the naval supremacy of Holland was destroyed; the first Navigation Act was passed, by which English commerce was promoted. Though the despotism of Cromwell had antagonized the people and prepared them to welcome the return of the Stuarts, the fact cannot be ignored that without the stern rule of Cromwell, a peaceable restoration of Charles II would have been impossible. See CROMWELL; NAVIGATION ACTS; CHARLES I.

Commune, in France the smallest division of a province or department. It corresponds to our township, and to the English parish. Each commune is in a measure independent, and is governed by its own council and a *maire,* or mayor. The communes vary greatly in population from a few dozen in a thinly populated, mountainous district up to the commune of Paris with its millions.

Communism, the common ownership of all property. Each member works for the community. Each is a member of one large family, embracing the entire community. Communism differs from socialism in that the latter contemplates that certain utilities or industries shall be owned by the people instead of the capitalists, and that wage earners work for the public instead of for private employers. Public ownership of waterworks, roads, gas plants, telegraphs, railroads, are some of the preliminary steps of socialism. Communism, however, extends to all forms of property. In a strictly socialistic community, a man may raise peas for his own table, but not peas for sale. The public pea patch takes care of the market. In a strictly communistic society, there are no private pea patches. The public patch is the only one; and, in fact, the public table is the only table. The communistic gardener could make no use of private peas if he had them.

The earliest Christian churches were communistic. Ananias and Sapphira, his wife, it may be remembered, were struck dead for pretending that they had put all their property into the common treasury, when in fact they were withholding a part. The various religious orders of monks and nuns are founded on the principle of communism.

The French Fourier (1772-1837), a Lyons merchant, questioned the righteousness of existing mercantile and manufacturing systems whereby the few become rich at the expense necessarily of the many. His doctrines, known as Fourierism, took root in the United States in the early part of the nineteenth century. Horace Greeley was very much impressed with the idea of communism as a preventive of misery and want. The two periodicals known as the *Phalanx* and the *Harbinger* were founded to advocate communistic principles. Between thirty and forty associations or communities were organized.

Robert Owen, a British manufacturer, brought over a number of his countrymen to found societies. The most noted was that at New Harmony, Indiana. The Shakers are a communistic denomination, found chiefly in New York. The Oneida Community of New York was established in 1848. It carries on a number of industries. The steel trap used by the trappers of the Northwest for several decades bears the stamp of the Oneida Community. Oneida silverware is of excellent quality.

The Amana Community still flourishes in Iowa. It comprises seven villages with surrounding farm lands. The society is noted for thrift, fine stock, and manufacturers of woolen goods. Dowie's Zion City in Illinois is the latest notable attempt of the sort.

The following quotation is from the *Britannica*. It applies more properly to the talking communist. "The opinion that a communist is a man who has no property to lose, and who therefore advocates a general redistribution of wealth, is very widespread and popular. It is embodied in the well known lines of the corn-law rhymer:

What is a Communist? One who hath yearnings
For equal division of unequal earnings.
Idler or bungler, or both, he is willing
To fork out his penny and pock your shilling.

See BROOK FARM; SOCIALISM; NEW HARMONY.

Community Center, an organization of the adult members of a community, such as a school district, a township, or a village, for the general improvement of the members and the conditions under which they live. The school district is the most desirable unit to organize into a community center, the school house is the logical place for the meetings and the community forum is the best form of organization.

The National Congress of Community Centers held in New York in 1916, formulated the following principles as essential to the successful formation of the community center:

1. Public buildings should be available for the use of the people as a right instead of a permission.
2. Tax money should be used in the promotion, development and maintenance of community centers.
3. Community centers should be administered through responsible public officials.

THE COMMUNITY FORUM is the most desirable form of organization for a community center. Bearing in mind the foregoing principles, the form of organization should be as simple as possible, therefore the constitution and by-laws should be brief. The membership should include all adult residents of the district, and the school principal or some one nominated by him should be the executive secretary of the organization.

The Hollis-Johnson Community Forum measure, presented to Congress by the Grover-Cleveland Forum of Washington, contains suggestions for those desiring to form a community forum. Write the Bureau of Education, Washington, D. C., for this and other helps. If the Community Center is to be supported by public funds it will be seen that it must rest upon legal enactment, and the first great work of the center may be the securing of such legislation as is necessary to raise it from a volunteer and temporary organization to one having a responsible status. The forum and its work, have been described by ex-President Wilson in the following words:

It is citizens going to school to one another in the common schoolhouses to understand and answer public questions as hitherto only representatives of the citizens have gone to school to one another in buildings provided for them.

The community forum should be what its name indicates, an *open forum* where any citizen of the district should feel free to present for discussion, under ordinary parliamentary rules, any subject proper to present to a public assembly.

But the center must be more than a debating society. Once it is opened, the community house should be completed into the *community home*—young peoples' organizations should be encouraged and provided for; entertainments, social gatherings, celebrations of national holidays, fellowship and other meetings should find a place on the program.

The community center is the most potent agent for enriching rural life and making the country so attractive to boys and girls that they will remain on the farm instead of going to the city. Young peoples' organizations closely affiliated with the community center are the Boy Scouts of America, Boys and Girls Clubs, and Camp Fire Girls.

THE COMMUNITY CENTER IN VILLAGES AND CITIES. In villages and small towns the community center might be styled the "melting pot" for local organizations, such as the commercial club, the village im-

provement society and organizations for the welfare of the community. Such organizations work more effectively and harmoniously if they feel that they have a common interest and that the work of each helps that of all the others. The community center is the organization through which this can be accomplished. Many school buildings in large cities are used as community centers under the immediate direction of the principal and teachers of the schools, with excellent results. A school principal or superintendent interested in the movement can usually effect an organization.

The local papers and the churches of a village or town can and should be made the most influential agencies in forming and maintaining community centers in their respective localities.

Commutator. See DYNAMO.

Como, a lake, a province, and a city in Lombardy at the Italian foot of the Alps. The province is the traditional headquarters of the Italian peddler of small wares. Lake Como is one of the most beautiful in Italy. It is sixteen miles in length and about two and one-half in width. It lies 700 feet above the level of the sea, nearly 200 feet above Milan. It is surrounded by mountains from 3,000 to 7,000 feet high, and is bordered by delightful driveways and country seats. Lake Como trout are celebrated for their flavor. The population of the entire commune, including the city, is about 25,000.

Compass, an instrument designed to indicate directions. It is constructed on the principle that a lodestone, or magnetized needle, will swing into a north and south line if mounted on a pivot, so as to turn freely. A suspended needle and a dial are the essential features. A mariner's compass is swung in rings in such a way that the dial keeps a horizontal position, however the ship may pitch and toss. These rings are called *gimbals.* The gimbals with the compass are then placed inside a box, called the *binnacle.* Inside the binnacle, in the direction of the ship's bow, is a vertical black line called the *lubber-line,* and the steersman must keep the point of the card which marks the prescribed course always in contact with the black line. The dial is laid off in the figure of a star with thirty-two rays corresponding to the thirty-two directions recognized by a seaman. Between north and northeast, for instance, designated in the usual way by N. and NE., are three additional directions called north-by-east, north-northeast, and northeast-by-north, designated as NbE, NNE, and NEbN respectively. To box the compass is to pass around the dial, beginning at the north, and naming the thirty-two directions consecutively.

It is difficult to give proper credit for the invention or discovery of the compass. The Chinese seem to have understood its secret 3,000 years before Europeans learned to steer without the aid of the sun and the North Star. According to some authorities, Marco Polo brought back a knowledge of the compass from Cathay in 1260.

Owing to the position of the magnetic poles and the unequal distribution of iron and magnetic ores, there are few lines on the earth's surface where the needle assumes an exact north and south direction. A deviation is called variation of the compass. The compass used for land surveying differs somewhat from the mariner's compass. Engineers who are running railroad lines or surveying public lands ascertain the variation by reference to the North Star and make due allowance. In the United States, the line of no variation crosses Lake Erie into western Pennsylvania and passes southeasterly into the Atlantic, near the boundary between the Carolinas.

Dr. William Gilbert, physician to Queen Elizabeth, first explained the action of the compass. In place of the theory that the needle is drawn into position by the influence of certain stars, he showed that the earth is a magnet, and that the earth acts on the needle as one magnet acts on another. Subsequent investigation has demonstrated the truth of Gilbert's theory. Inasmuch as unlike poles of magnets attract each other, that spot in the northern hemisphere that attracts the north pole, or north end of the magnetic needle, is considered the south magnetic pole of the earth. Moreover the magnetic poles are not located at the

geographic poles. In 1831 the south magnetic pole was located in Canada in latitude 70° 30′, longitude 95°. The north magnetic pole, *i. e.,* the pole that attracts the south end of the needle, is in latitude 72° 35′ S., longitude 152° E. Explorers in polar regions find it necessary to be on guard. When carried to a point east of the south, that is to say, the Canadian magnetic pole, the needle points west, and at a corresponding point to the westward, the needle points east.

See NORTH STAR; ROGER BACON; MAGNET.

The variation itself could not be accounted for on the doctrine vulgarly received, that magnetism is an effluvium issuing forth from the root of the tail of the Little Bear, but was scientifically, though erroneously, expressed by Gilbert's hypothesis that earthly substance is attractive—that a needle approaching a continent will incline toward it; and hence that in the midst of the Atlantic, being equally disturbed by Europe and America, it will point evenly between both.—Draper.

Compass Plant, a large prairie plant called also "rosinweed," from the abundance of resinous matter it contains. It derives the name "compass plant" from the fact that when found on the prairies the stem leaves stand edgewise and point due north and south. This peculiarity, found also in the prickly lettuce, is due to the sensitiveness of the leaves to light. Both sides are equally susceptible, and only by standing vertically with their tips to the north and the south can the leaves secure uniform illumination.

Compleat Angler, The. See WALTON.

Composition, English, the art of writing English, as taught in primary and secondary schools. In primary schools practice in writing is given as incidental to other subjects. Even the members of the First Reader class put together the words they learn to form sentences. This is composition, and in our public schools such practice is continued in connection with reading, grammar and other subjects, and is sometimes taught by means of a special class up to the high school. In high schools and academies English Composition or Composition and Rhetoric is a first year subject, continued during the course in connection with the study of literature, or by means of a literary society or regular rhetorical exercises in which all students participate. In colleges practice in writing is given under the subject of Rhetoric.

Composition as a high school subject follows and in a sense completes technical grammar with the essentials of which students should at this time be familiar. It precedes and introduces rhetoric, such subjects as choice of words, qualities of style, figures of speech, being treated incidentally either with or without a text-book on the subject. Text-books on composition deal usually with the four important classes of written discourse, narration, description, exposition, and argument. The chief object of the study, however, and the constant aim of the teacher, should be to give students daily practice in the art of writing until they express their thoughts readily on paper. Arlo Bates, in his practical and witty *Talks on Writing English,* says, "the way to write is to write" and goes on to liken writing to piano playing, skill in which can be acquired only by constant and patient practice. Those whom we regard as the greatest geniuses have often been the most patient and persistent in practicing their art.

"All through my boyhood and youth, I was known and pointed out for a pattern of an idler; and yet I was always busy on my own private end, which was to learn to write. I kept always two books in my pocket, one to read, one to write in. As I walked, my mind was busy fitting what I saw with appropriate words; when I sat by the roadside, I would either read, or a pencil and a penny version book would be in my hand to note down the features of the scene or commemorate some halting stanzas. Thus I lived with words. And I wrote thus for no ulterior use It was written consciously for practice."—Robert Louis Stevenson.

Compressed Air, as a motive power has come to have a widely extended use. The compression is effected by means of pumps from whence the air is transmitted through pipes to where it is to be utilized. It is mainly employed where the conditions or distance would not permit the use of belts or shafting, as in bridge-building and tunneling in mines. Its application to rock drills, in riveting-machines, or in air-

brakes on trains is familiar. In recent years, electricity has largely taken its place for certain purposes, but new uses are constantly being found for it.

Compromise of 1850, also called the Omnibus Bill. See CLAY, HENRY; FUGITIVE SLAVE LAW.

Compulsory Education, attendance at school enforced by law. That it is the privilege and duty of a state to train children for future citizenship has been recognized from ancient times. Sparta took boys from their parents at the age of seven, taught them to read and to be brave soldiers. Athens trained both brain and body, developed the moral nature and the sense of beauty. Rome gave military training at public expense.

In modern times there are laws in force in the United States and in nearly all European countries compelling parents to send children between the ages of six and fourteen or sixteen, to school during a certain number of months of each year.

State laws for the purpose of compelling school attendance were not in force generally until the latter part of the nineteenth century. They have been enacted usually as a result of the growing tendency to put children to work to help support the family. Laws differ in various states as to the limits of school age, the number of months of schooling required yearly, and the penalty for disobedience of the law. The number of years included under school age varies from four to ten. Attendance is required yearly for half the term, the full term or for a definite number of months. The penalty of disobedience is in most cases a fine, in some, imprisonment. In large cities the laws are enforced by truant officers; in rural districts or small towns the school board enforces the law. Defective children and those in ill health are of course exempt.

Compurgation, in early English law, a mode of trial according to which the accused was permitted to bring a number of friends to express a belief in his innocence. The compurgators, "oath helpers," were generally twelve in number. They were usually kinsmen or fellow guild members. They were not called as witnesses; the accused swore that he was innocent; the compurgators swore that they believed his oath to be "clean and without guile," and that they were satisfied of his innocence. The custom was brought to England by the Saxons. It appears to have been not uncommon among Teutonic tribes. It is believed that the "trial by jury," not infrequently attributed to King Alfred's reign, was simply compurgation, and that a person charged with crime could be acquitted by this method. Twelve men could clear an accused kinsman by stating under oath their belief in his innocence. Compurgation was abolished in the English courts by the Assize of Clarendon, 1166. This code was issued by Henry II with the advice and consent of a council of barons and prelates. An institution bearing some resemblance to a modern grand jury took the place of the compurgators. Compurgation in the courts of the church was abolished during the reign of Elizabeth. A curious survival of the practice of compurgation was the wager of law, whereby a person sued for debt could clear himself by bringing in eleven neighbors to testify under oath that they believed the defendant's sworn denial that he owed the sum in question. This relic of Saxon compurgation was abolished in 1833. The compurgators were not jurymen in the modern sense of the term, but compurgation was one of the elements which, in Norman hands, grew into the jury system.

Comte, kônt, **Auguste** (1798-1857), the founder of the system of philosophy known as Positivism, and the first systematic writer on sociology. His doctrine, in brief, is that intelligence, both of the individual and of society, has passed through three stages: first, that in which supernatural beings are thought to produce all phenomena; second, the state in which abstract forces, either mental or physical, are believed to be the causes of all activity; and, finally, the Positive stage, in which men give up inquiring into the causes of things and deal only with actual phenomena and the relations between them. His best known works are *Positive Philosophy, Positive Catechism,* and *Positive Polity.*

Comus, kō′mŭs, a mask by John Milton, presented before the Earl of Bridgewater at Ludlow Castle September 29, 1634. It was first printed in 1637. It is the longest and most important of Milton's minor poems. At this time the popularity of the mask, as a form of entertainment, was at its height. Charles I appointed the Earl of Bridgewater Lord President of Wales, the official seat of which position was Ludlow, Shropshire. The earl requested Henry Lawes, his children's tutor, to arrange a mask, or masque, as the word was then spelled, to celebrate his taking possession of Ludlow Castle. Lawes was something more than a tutor. He was also a musical composer of talent. He was the friend of Milton, whose assistance he asked in preparing the mask. Lawes explained the nature of the event to be celebrated, and told his friend what characters would be expected to take part. Milton wrote the poem. Lawes furnished the music and looked after the staging. He also took one of the prominent parts, that of the attending spirit. The part of "The Lady" was taken by the earl's fourteen year old daughter. The Lady's brothers were represented by his two younger sons. The other characters of the Mask are Comus, an enchanter, son of Circe, and Sabrina, a nymph. Comus carries off the Lady and places her in a beautiful palace under the spell of his magic art. Her brothers, led by the attendant Spirit, put Comus to rout; and with the aid of Sabrina, liberate their sister from the spell which holds her. That is all the story, but Milton, as Taine says, was able to "impress his own character even on ornamental poems which were only employed to exhibit costumes and introduce fairy tales." The poet makes use of his simple setting to glorify virtue; to show that the inherent power of goodness is proof against any evils that may assail it. He does this in a poem of lofty style and perfect finish, "the most perfect mask in any language."

It is interesting to note that the name *Comus* was not given to the mask until after Milton's death. Milton himself called it "A Masque Presented at Ludlow Castle, 1634, before the Earl of Bridgewater, Lord President of Wales." *Comus* was presented by the students of Tufts College, Massachusetts, in 1901.

Comus has been widely quoted. The last quotation given includes the closing lines of the mask, which embody the lesson of the poem, and, we may say, present Milton's guiding principle. The entire poem contains only 1,023 lines. There are few poems of equal length that will better repay careful reading.

He that has light within his own clear breast
May sit i' th' center and enjoy bright day;
But he that hides a dark soul and foul thoughts
Benighted walks under the midday sun.

Virtue could see to do what virtue would
By her own radiant light, though sun and moon
Were in the flat sea sunk.

So dear to heav'n is saintly chastity,
That when a soul is found sincerely so,
A thousand liveried angels lackey her,
Driving far off each thing of sin and guilt,
And in clear dream and solemn vision
Tell her of things that no gross ear can hear,
Till oft converse with heav'nly habitants
Begin to cast a beam on th' outward shape.
. . . Against the threats
Of malice or of sorcery, or that power
Which erring men call Chance, this I hold firm:
Virtue may be assailed, but never hurt,
Surprised by unjust force, but not enthralled:
Yea, even that which Mischief meant most harm
Shall in the happy trial prove most glory.

Mortals, that would follow me,
Love Virtue; she alone is free.
She can teach ye how to climb
Higher than the sphery chime;
Or, if Virtue feeble were,
Heaven itself would stoop to her.

CRITICISMS.

Judged in respect of its allegory, its pastoral beauties, its lyric strains, its epic flavor, its lofty philosophical tone, its "inevitable" lines or poetic "touchstones," Comus must be regarded as one of the most perfect fruits of Milton's genius.—Gayley and Young.

Comus, well worked out, with a complete originality and extraordinary elevation of style, is perhaps Milton's masterpiece, and is simply the eulogy of virtue.—Taine.

I did not perceive its faults.—Anon.

Concept. See THINKING.

Conch (kŏnk) **Shell,** a large spiral shell with a flowing lip, formerly much used as a dinner horn to call the men from the field. In Hawthorne's day the fish dealer announced his passage along the village street by blowing lustily on a conch

shell. The large pink conch of the West Indies is in demand for its pearl, and is much used for inlaid work, buttons, pearl handles and the like. Held to the ear, the conch gives forth a murmuring sound likened by the poets to that of the distant ocean.

But I have sinuous shells of pearly hue
Within, and they that lustre have imbibed
In the sun's palace-porch, where when unyoked
His chariot-wheel stands midway in the wave;
Shake one, and it awakens; then apply
Its polished lips to your attentive ear,
And it remembers its august abodes,
And murmurs as the ocean murmurs there.
—Walter Savage Landor.

Conclave, the college of cardinals assembled to elect a pope. The name is also applied to the apartment in which the election is held. The last conclave was held at Rome, July, 1903. It lasted for five days. Seven ballots were taken, resulting in the election of the patriarch of Venice, or Pius X. This was the first and only conclave in which a cardinal from the United States has ever taken part. See CARDINAL; POPE.

Concord, Massachusetts, a town on the Concord River, twenty miles northwest of Boston. It was settled in 1635, five years later than Boston. The present village had a population in 1920 of 6,461. It is situated in a beautiful farming region, forty minutes by rail from Boston. There are a number of manufactures. Concord is celebrated as the place of residence of a number of noted literary people. The gray stones of Sleepy Hollow burying ground near by bear the names of Emerson, Hawthorne, Thoreau, and Alcott, and their former residences are still pointed out. The "Old Manse," in which Hawthorne wrote his *Mosses,* is here. Ephraim Bull, the propagator of the famous Concord grape, lived here, and his grave is among those of the local celebrities.

At the beginning of the Revolutionary War, April 19, 1775, General Gage sent a command to destroy a large store of powder, balls, and muskets at Concord. The first American blood was shed at Lexington. The redcoats were met at Concord Bridge by the minute men who made a brief resistance, during which the first British fell. A century later, a bronze monument of a minute man on a granite pedestal was unveiled. On the pedestal is engraved the first stanza of Emerson's well-known poem, as follows:

By the rude bridge that arched the flood,
Their flag to April's breeze unfurled,
Here once the embattled farmers stood,
And fired the shot heard round the world.

See LEXINGTON; EMERSON.

Concord, capital of New Hampshire, and county seat of Merrimack County, located seventy-five miles northwest of Boston. As it is in the center of the white granite region the quarrying of that mineral is one of its leading industries. It has a variety of manufactures, among them furniture, pianos, silverware, carriages, flour, leather goods, cotton and woolen goods, shoes, etc. Its wide streets, handsome state and municipal buildings, and numerous parks give the city a pleasing appearance. The population in 1920 was 22,167.

Concord Grape, the leading American grape. In 1840 some boys scattered wild fox grapes about the place of Mr. Ephraim Bull of Concord, Massachusetts, and a number of grapevines grew up. In 1843 his attention was attracted by a bunch of grapes on one of these seedlings. Mr. Bull planted these grapes, and in 1849 he obtained a fine fruiting vine, which he named the Concord. From this vine fifty varieties of Concord grapes have sprung, and yet it was the grandchild of a wild grape from the woods of Concord. The original Concord vine is still growing, but it has been reduced to a mere sprout from the old root. Mr. Bull died in 1895, in his ninetieth year. It is to be regretted that one who conferred so great a benefit on his country, and who lived so unselfishly, should have ended his days in poverty.

Some eight years ago the editor of *Farm, Stock and Home* visited the old town of Concord, Massachusetts, around which are wreathed historical and literary laurels in great abundance and of rare value; yes, and of rare horticultural value too; for a humble little garden there was the birth place of the Concord grape. Visiting the old vine at the time mentioned, it was found to be in a woefully neglected state, as was the entire garden, and the always humble and modest home of the Concord's originator, Ephraim Wales Bull. Before leaving town the editor made

a vigorous protest to some of the town authorities against the treatment the old vine and home were receiving, and asserted that both, preserved and well cared for, would in the early future constitute a relic and attraction in the town that would prove more attractive to many pilgrims who annually visit it than any one of the many other relics it possesses.

Whether the protest had any effect or not, a recent visit disclosed a radical change in the condition and environment of the old vine. The last is now enclosed in a substantial trellis, it is kept fairly free from grass and weeds; the house and grounds are in a well kept condition; and a movement is on foot to erect a suitable monument to Mr. Bull, who "sowed that others might reap,"—the sentiment on the bronze tablet on the native granite boulder at the head of his grave.

To the trellis has been attached an ancient looking bit of board carrying the following inscription, cut by Mr. Bull himself in well-formed letters:

"I looked about to see what I could find among our wildings. The next thing to do was to find the best and earliest grape for seed, and this I found in an accidental seedling at the foot of the hill. The crop was abundant, ripe in August, and of very good quality for a wild grape. I sowed the seed in the autumn of 1843. Among them the Concord was the only one worth saving.—E. W. Bull."

This is the story of the origin of the Concord grape as recorded by its originator in a manner which made it desirable to tell the story in the fewest words possible.—S. M. Owen.

Concordance, a finding list of passages in an important work or series of writings. The principal words are arranged alphabetically. Under each, the various phrases are cited in which the word occurs. Perhaps the most celebrated is the concordance to the Holy Scriptures by Alexander Cruden, published in 1737. If we want to find an account of the destruction of the temple by Samson, we turn to *posts* and find the following: Judges xvi: 3, Samson took the two p. Turning to the third verse of the sixteenth chapter of Judges, we find the desired passage. Numerous concordances to Shakespeare's works have appeared. The best is that by John Bartlett, published in New York in 1894. The alphabetical index placed usually at the end of an author's work, is a brief concordance.

Concordat, a treaty between the pope as head of the Church of Rome and a civil government dealing with affairs of the Roman Catholic Church, within the state represented. As a rule the affairs so treated have both a temporal and religious aspect, though they may be either purely temporal or purely spiritual. The first such agreement was the celebrated Concordat of Worms between Pope Callistus II and Emperor Henry V, which settled a quarrel between church and state regarding the right of investiture. Two other well-known concordats are that of 1516 between Leo X and Francis I of France and the agreement between Pius VII and Napoleon in 1801. The latter concordat was abrogated in 1905 by the separation of church and state in France.

Concrete, an artificial stone. Builders' concrete of the present day is made of one part of Portland or hydraulic cement, three parts of sand, and six parts of crushed stone. The sharper, more angular, and clean the sand and stone, the better. These materials are mixed thoroughly with water, deposited either in molds to form slabs and blocks for curbing and paving, or else laid in the foundation or wall, and allowed to harden where the concrete is to remain. The ancient Babylonian, Egyptian, Greek, and Roman builders were familiar with this kind of material. The Romans, especially, employed concrete in the construction of foundations, piers, aqueducts, roadways, and bridges, portions of which still remain. In the early part of the nineteenth century the French constructed a breakwater to protect the harbor of Algiers. For want of quarry stone, blocks of concrete, weighing twenty-two tons each, were dropped into water fifty feet deep until they formed a long, irregular mole or protective wall. Concrete is used extensively in making a footing for brick or stone walls, especially in muddy, soft excavations where it is not practicable to reach bed rock. The foundation walls of the Chicago postoffice are supported in this way. Of late concrete slabs of superior quality have come into favor for sidewalks, and the cheapening of Portland cement has suggested the use of concrete for entire buildings. It is not unusual to use concrete blocks in place of cut stone for door sills, window sills, window caps, and the like. See CEMENT.

Condé, kōn-dā′, a French family, a younger branch of the Bourbons, taking the name from the town of Condé. For an account of the most noted Prince de Condé (1530-1569), see HUGUENOTS.

Condenser. See LEYDEN JAR.

Condor, a large vulture-like bird of prey, inhabiting the Andean region of South America. It is the largest bird that flies. It measures over three feet from the tip of its bill to the end of its tail, and has a total wing expanse of nine or, in unusual specimens, fourteen feet. Its general color is a grayish black, terminating in a white, fluffy, silky collar or ruff, into which the bird withdraws its wrinkled head and neck for warmth and protection. The condor nests on the most inaccessible cliffs, laying two white eggs, four inches in length. The condor requires seven weeks to hatch its eggs, and the young must be fed for a whole year before they are able to fly. The condor soars at enormous altitudes—from 10,000 to 15,000 feet above the sea. It has a wonderful eye, and a keen sense of smell. The name condor is, in fact, derived from an old Indian word signifying a good smeller. Condors are usually seen in groups of three or four; never in large companies.

If the truth must be told, this bird, so noble in flight, is a greedy, repulsive creature close at hand. It descends to the plains upon the slightest promise of carrion. Dead animals of every sort are its choicest food. Condors gather in disgusting groups around a dead horse or cow, and tear the carcass, devouring such enormous quantities that they are at first unable to fly, and are killed by the Indians with clubs and stones. The condor is not especially courageous. It attacks little alpacas, wounded animals, or sick cattle, first tearing out the eyes and the tongue. Its nature seems to be very much like that of the alpine lammergeir to which, indeed, it is closely related.

The California condor, or vulture, is almost as large as the Andean. It formerly ranged from British Columbia southward, but is no longer seen north of Southern California. The eggs, now to be found only in the high coast Sierras, are quoted by collectors at $225 a nest.

I was told by the country people in Chile that the condor makes no sort of nest, but in the months of November and December lays two large white eggs on a shelf of bare rock. It is said that the young condors cannot fly for an entire year; and long after they are able they continue to roost by night, and hunt by day with their parents. The old birds generally live in pairs; but among the inland basaltic cliffs I found a spot where scores must usually haunt. On coming to the brow of the precipice, it was a grand spectacle to see twenty or thirty of these great birds start heavily from their resting-place and wheel away in majestic circles.—Darwin.

Cone, one of the geometrical solids. A right circular cone is a solid occupying the space through which a right-angled triangle passes when swung clear around on one leg; that is to say, when it turns on its heel. The discussion which follows pertains to a cone of this sort, not to an oblique cone. The base of a cone is circular. The opposite point is called the apex. If a portion next the apex be cut off by a plane, the remainder is a truncated cone. The volume of a frustrum may be found by subtracting from the volume of the complete cone the volume of the portion that has been removed. The lateral surface of a cone equals the product of the circumference of its base by half its slant height. The solid content or volume of a cone equals one-third the product of its base by its altitude, not its slant height.

Every section of a cone passing through the apex is a triangle. By passing a cutting plane through a cone in various ways four different sections, called conic sections, may be formed. They are the circle, the ellipse, the parabola, and the hyperbola. If the cutting plane be parallel to the base, the section is a circle. If the cutting plane pass obliquely through the cone, not parallel to the base, the section is an ellipse. If parallel to the side of the cone, the section is a parabola. If perpendicular to the base, but not passing through the apex, the section is a hyperbola.

The circumference of the circle is, of course, everywhere equally distant from the center. Instead of a center, an ellipse has two points within, called foci. The sum of the distances from the foci to any point in the circumference is always the same. The farther the point is from one focus, the nearer it is to the other. In theory, the

ends of the arc of a parabola will meet somewhere in space if sufficiently extended. Comets are supposed to move in parabolic paths, by virtue of which they come within our vision at regular intervals of time. The cables of a suspension bridge when loaded uniformly are said by engineers to swing in the arc of a parabola. Leaving out of consideration the resistance of the atmosphere, a cannon ball or a jet of water from the spigot of a barrel describes a portion of a parabola. In theory, the arc of the hyperbola is never completed. A projectile following a hyperbola would travel on and on into space and never return.

Coney Island, a popular pleasure resort situated at the southwestern angle of Long Island. Suburban railways and lines of boats give ready access. Hordes of pleasure seekers from New York, Brooklyn, and Jersey City frequent the resort during the summer season. Henry Hudson is reputed to have landed here in 1609.

Confectionery, a general name given to a great number of sweetmeats, as candy, candied fruits, bonbons, caramels, sugar plums, and comfits. Originally the confectioner was a druggist who used sweets to disguise the taste of unpleasant medicines. The first candy then was medicinal, a nature still suggested by horehound, peppermint, wintergreen candy, lemon drops, cough drops, and the like. The next step appears to have been the drying of fruits in syrup or sugar. England led the way in making "boiled sweets." "Sweeties" is still the name used by British children. From England the making of candy spread to the continent. About 1850 candy appeared in Germany and in France, but the Americans inherited a "sweet tooth" from the mother country at an earlier date.

While it would be out of the question to enumerate the various kinds of candy, stick and drop, creams and chocolates,—a glance at the growth of the candy industry in the United States is instructive. During the half century elapsing between 1850 and 1900, the 383 candymaking establishments grew to 4,297. Thirty-five million dollars of capital are now invested in factories. These factories use $45,000,000 worth of sugars, syrups, flavors, and other material, and produce $81,000,000 worth of candy a year. At retail prices the American people, counting men, women, and children, pay out about $1.50 per year each for candy. According to the last census 33,888 people were earning wages in candy factories. No doubt twice as many more are engaged the whole or a part of their time in selling confectionery. At a low estimate, one person out of a thousand earns a living by making, shipping, or selling candy.

The production of American candy was:

1850	$3,000,000
1880	33,000,000
1905	87,000,000
1910	134,000,000

Americans ate 2.2 pounds of candy apiece in 1880, and over 4.1 pounds apiece in 1907. In 1910 the United States consumed twice as much candy as all the rest of the world put together.

Confederacy, The, a name given to the union of the Confederate States of America. It was formed at Montgomery, Alabama, February 9, 1861, by South Carolina, Georgia, Florida, Mississippi, Alabama, and Louisiana. Jefferson Davis of Mississippi was elected president, and Alexander A. Stephens of Georgia, vice-president. The Confederacy was afterward joined by Texas, Arkansas, Tennessee, North Carolina, and Virginia. Missouri and Kentucky were prevented from joining by the efforts of the Unionists, aided by Federal troops. The capital was afterward removed to Richmond, Virginia. The constitution adopted was modeled on that of the United States. The president was to be chosen for six years, and was not eligible for reelection. Protective tariff, that is to say, a tariff for other purposes than revenue, was forbidden. Slavery was expressly recognized and safeguarded. The foreign slave trade, however, was prohibited.

The secession of these states, and the formation of a new union was in itself an express declaration of state sovereignty. The framers of the new constitution insisted that the right of a state to secede went without saying. They incorporated no specific statement of the principle. The Confederacy included a population of about 5,000,000 whites and 3,000,000

slaves. The government of the United States never recognized the Confederacy as a nation or its government as a government. It treated the people of the South as citizens in rebellion against the national authority. A cordon of ships and armies surrounding the Confederacy drew its lines tighter and tighter each campaign. With territory constantly diminishing, and under the necessity of defending itself on all sides, the Confederacy was practically in a state of martial law during its entire existence. Its constitution had little opportunity to be tested, yet its friends were of the opinion before the war ended that it did not give the central government sufficient authority. Certainly President Davis found it necessary to assume far more power than the constitution of the Confederacy contemplated.

Historians are inclined today to say that the Constitution left unsettled the question of the right of secession. Almost every important section of the country had threatened it at one time or another. By 1860, however, the people of the largest section of the Union had grown to regard the central government, that is to say, the president and Congress, as an authority to which each citizen owed personal obedience. The greater part of the Union had grown to consider the national authority superior to that of the state. That being the case, it was too much to expect that they would permit a minority, the small end of the country, to defy that authority. A citizen of Pennsylvania felt that a citizen of South Carolina must be made to obey the government which he himself obeyed, and the North being stronger than the South, made the South do it. The Confederacy lasted a little more than four years.

See CIVIL WAR; SECESSION; TOOMBS; DAVIS, JEFFERSON.

Confederate Veterans, United, a patriotic society composed of veterans of the Confederate Army. It was organized in New Orleans, Louisiana, in 1889 for the purpose of renewing friendships formed during the war, gathering historical material concerning it, caring for the disabled, and assisting the widows and families of those who had lost their lives while members of the army. There are 1,600 local camps as they are called, the members of which number about 75,000. State organizations are known as divisions. The United Society holds annual reunions.

Confessions of an English Opium Eater, an autobiographical work by Thomas De Quincey, published in the *London Magazine* in 1821, and in book form in 1822. This work won immediate success, and is by far the most famous of all of De Quincey's writings. A second version, much longer than the first, but containing the whole of the earlier work, was written in 1855-6. *The Confessions* tells the story of the author's own experiences in acquiring and overcoming the opium habit. In it is found some of De Quincey's most valuable writing. It is original, polished, poetical, and often humorous. The long digressions are all interesting, are held under the author's control, and usually the return to the subject in hand is most happy. Hunter says, "It is only the story of the childhood of a man of genius; curious indeed, full of strangely pathetic incidents, but, from the ordinary standpoint, morally blameless." To the first part of *The Confessions,* as printed in the *London Magazine,* was appended the following editorial note, "The remainder of this very interesting article will be given in the next number." The October number accordingly contained Part II and Part III of *The Confessions,* with an editorial note by Thomas Hood as follows: "We are not often in the habit of eulogizing our own work, but we cannot neglect the opportunity . . . of calling the attention of our readers to the deep, eloquent, and masterly paper which stands first in our present number." See DE QUINCEY.

Confucius, kon-fū′she-ŭs (550-478 B. C.), a Chinese religious teacher. His Chinese name was Kung, to which *fu-tse′*, meaning reverend doctor, was added. Confucius is the Latinized form of Kung-futse′. He was of royal descent, but was raised in poverty by his mother. He was educated for office in the learning of China. His first official commission was that of inspector of the grain markets. He taught school for a time. One remark of his is

worth remembering. "When I have presented," said he, "one corner of a subject, and the pupil cannot, of himself, make out the other three, I do not repeat my lesson." At an early age he began to visit the various provinces, preaching a system of morals to which he won many adherents. Confucius is credited frequently with the authorship of the nine classics which form the canonical books of the Chinese. Although, as compiler, commentator, or teacher, he left his impress upon all of these, he wrote but one, *Spring and Autumn Annals,* the last of the Five Classics. His disciples drew up his teachings and sayings in what are known as the Four Books, which, with the Five Classics, make up the nine canonical books. Confucius made no pretense to divinity. He taught a simple, plain code of practical ethics, remarkable for an almost total want of theology or creed. "To give one's self earnestly to the duties due to man, and, while respecting spiritual things, to keep aloof from them, that may be called wisdom," said he. He has an immense following in the Orient. The adherents of Confucius, chiefly in China and Japan, are estimated at no less than 256,000,000. See CHINESE EMPIRE; LITERATURE, CHINESE.

Conglomerate, a rock commonly called "puddling stone," formed of pebbles cemented together by finer-grained rock material. Conglomerates can form only in shallow waters along shores, so when found in the strata of the earth's crust they indicate that, in some past age, the waters here encroached upon the land. The pebbly beaches now being formed will become conglomerates when consolidated. This rock generally separates one geological formation from another.

Congo, or **Kongo,** a river of equatorial Africa. The length is about 3,000 miles. In volume, the Congo is the second river in the world, ranking ahead of the Mississippi, and next the Amazon. The Congo leaves Lake Bangweolo in northeastern Rhodesia, near the line of twelve degrees south latitude. It describes an immense arc to the northward, crossing the equator twice, and empties into the Atlantic Ocean at the line of six degrees south latitude. The last section of the course is ten miles in width. The mouth of the river was known to the Portuguese in the fifteenth century. Settlements were made on that part of the coast.

In 1876-7 Henry M. Stanley followed the outlet of the Bangweolo clear to the Atlantic Ocean. He was the first white man to visit the middle Congo, and, indeed, the first to make known that the head waters and the lower course of this river were one. Stanley desired to call the river the Livingstone.

The Congo is navigable for seagoing ships to the port of Boma, 110 miles from the sea. A railway leads from Boma around 100 miles of cataracts to Stanley Pool. Pool steamers ascend for 1,000 miles farther to Stanley Falls. There are several large tributaries. It is thought that the main stream, with its tributaries, affords in all over 7,000 miles of navigable waterway. There are two rainy seasons, extending from October to December, and from February to May.

The basin of the Congo is too large to be described in a few words. Its forests rival those of the Amazon. The entire area comprises over a tenth of all Africa. Estimates place the population of this vast region at no less than 30,000,000, chiefly negroes, known racially as Bantus.

French Congo lies on the north bank of the river, near the coast. Portuguese Congo or Angola lies on the coast south of the mouth. Belgian Congo comprises the greater portion of the interior, with a small strip along the river to the coast. A part of the head waters, as stated, lies in Rhodesia.

Congo Free State. See BELGIAN CONGO.

Congregationalists, The, a religious denomination. The Congregationalists differ from the Presbyterians less in point of doctrine than in form of church government. Each Congregational church has authority to elect its own governing body, select its own pastor, and determine its own form of worship. The Congregationalists of England are often known as Independents. Congregationalism in America had its rise in New England in the settle-

ment of Plymouth, 1620. Yale, Dartmouth, Amherst, and Oberlin are among the older Congregational colleges. There are in the United States about 6,000 (6,012 in 1909) Congregational churches, with over 700,000 communicants. There are as many now in Great Britain, Canada, Australia, and other English-speaking countries. The denomination is noted for intelligence and for activity in Sunday school and missionary work. See PILGRIMS; UNITARIANS; PLYMOUTH COLONY.

Congress, the lawmaking body of the United States. The Constitution provides that the Congress shall consist of a Senate and a House of Representatives. Our Congress is founded on the British Parliament. The members of the British House of Lords hold their positions for life. Our senators are chosen by vote of the people for a period of six years. The members of the House of Commons are elected to serve for seven years, or until the ministers (cabinet) decide to dissolve Parliament and order a new election. Our representatives are chosen by popular vote to serve for two years. In order that small states may not be crowded to the wall by the large ones, they are allowed equal representation in the American Senate. The number of representatives sent by each state is proportionate to the population. The vice-president of the United States presides over the sessions of the Senate. The House of Representatives chooses a speaker from its own number. The life of a Congress is for two years, the length of time for which representatives are elected. A Congress begins with the inauguration of a president. There are two Congresses for each full time administration. The old Congress expires on the fourth of March in odd numbered years. A new Congress, however, does not meet until the second Monday in the following December, unless called together by the president.

The legislative body corresponding to our Congress is, in Austria, the Reichsrath, or Imperial Council; in Sweden, the Diet; in Norway, the Storthing, or the great thing; in the Netherlands, the States General; in France, the National Assembly; in Spain, the Cortes, or courts; in Brazil, the National Congress; in Canada, the Parliament consisting of a Senate and a House of Commons; in the Commonwealth of Australia, the Parliament, consisting of the Legislative Council and the Legislative Assembly; in Germany, the Constituent Assembly. In Italy the legislative body is a Parliament, consisting of a Senate and a Chamber of Deputies. Even Russia and Turkey have recently adopted constitutions and the Russian assembly is known as the Soviet; the Turkish, as Parliament.

The following table gives the representation of the states in the Sixty-Third Congress, commencing March 4, 1913. In addition, a delegate with a voice, but no vote, was seated from the two territories,—Alaska, and Hawaii. Congress consists, therefore, of 96 senators, 435 representatives and 2 territorial delegates. The electoral vote is given as well.

States	Senate	House	Elec. Vote
Alabama	2	10	12
Arizona	2	1	3
Arkansas	2	7	9
California	2	14	16
Colorado	2	4	6
Connecticut	2	6	8
Delaware	2	1	3
Florida	2	4	6
Georgia	2	12	14
Idaho	2	2	4
Illinois	2	27	29
Indiana	2	12	14
Iowa	2	10	12
Kansas	2	7	9
Kentucky	2	10	12
Louisiana	2	7	9
Maine	2	3	5
Maryland	2	6	8
Massachusetts	2	16	18
Michigan	2	13	15
Minnesota	2	10	12
Mississippi	2	7	9
Missouri	2	14	16
Montana	2	2	4
Nebraska	2	5	7
Nevada	2	1	3
New Hampshire	2	2	4
New Jersey	2	13	15
New Mexico	2	1	3
New York	2	43	45
North Carolina	2	11	13
North Dakota	2	3	5
Ohio	2	24	26
Oklahoma	2	8	10
Oregon	2	3	5
Pennsylvania	2	36	38
Rhode Island	2	2	4
South Carolina	2	7	9
South Dakota	2	3	5

States	Senate	House	Elec. Vote
Tennessee	2	10	12
Texas	2	19	21
Utah	2	2	4
Vermont	2	1	3
Virginia	2	10	12
Washington	2	6	8
West Virginia	2	6	8
Wisconsin	2	11	13
Wyoming	2	1	3
Total	96	435	531

Territories	Delegates
Alaska	1
Hawaii	1

Congressional Record, a journal of the proceedings of the United States Congress. Before 1799 the Senate held secret sessions only, but since then proceedings have been made public, except in the case of executive sessions, through the "Visitors' Gallery" and the Congressional Record. The journal is not an accurate record of actual proceedings, for debaters may revise their speeches before they are printed, and speeches never delivered appear under "Permission to Print" as if they had been given on the floor and reports of debates are revised by participants before being printed.

Congreve, William (1670-1729), an English dramatist. He holds first place among the writers of comedy during the Restoration period. The romantic comedy of which *As You Like It* is the best example had now gone entirely out of fashion. In its place, we find plots drawn often from Spanish and French sources, vivid pictures of the fashionable life of the times, a great deal of witty dialogue, with much that is cynical, coarse, and even immoral. The other writers of this group are William Wycherly, John Vanbrugh and George Farquhar. Congreve was "courted, flattered, and famous" in his own day. He was supreme in the "comedy of repartee." *Love for Love* and *The Way of the World* are two of his comedies. He was a friend of Dryden and paid high tribute to him on the latter's death. See DRAMA; COLLIER.

QUOTATIONS.

Music hath charms to soothe the savage breast.
Defer not till tomorrow to be wise,
Tomorrow's sun on thee may never rise.

Conic Sections. See CONE.

Conifers (Latin, *cone bearers*), a large and important family of shrubs and trees. They produce naked seeds protected by corky or resinous scales in the form usually of a cone. A few, as the juniper, produce berries. Most conifers are evergreen; that is to say, they retain their old leaves, usually needle-shaped, over winter at least, until new leaves have made their growth. Conifers are not all evergreens. Tamarac drops its leaves in the fall. Comparatively few evergreens, holly for instance, are conifers; but the term evergreen has come to mean conifer and is so used in horticultural manuals, as an evergreen hedge, an evergreen windbreak, etc. In this use of the word there are about 300 evergreens in the world and about 100 native to North America, with 300 or 400 nurserymen's varieties. The beauty of evergreens lies in their natural shape. They should never be trimmed up like an ash or an elm. Their green foliage is pleasing to the eye at all seasons. Evergreens distributed with judgment impart to private grounds and dooryards an air of good taste, and give farms an appearance of comfort and prosperity that can be had so inexpensively in no other way.

Conjunctivitis. See OPHTHALMIA.

Con'kling, Roscoe (1829-1888), an American statesman, born at Albany, New York, later becoming district attorney for Oneida County. He was elected mayor in 1858, in the same year was sent to Congress, and in 1867 was chosen for the United States Senate. He was a stanch friend of President Grant, being one of his main supporters for a third term in 1880. With his colleague, Thomas C. Platt, he quarreled with President Garfield, of Civil Service Reform fame, the senators insisting upon their right to control federal appointments within their state. Both resigned their seats finally, and appealed to the next legislature for re-election in vindication of their attitude, but were unsuccessful. Mr. Conkling then practiced law in New York, declining the nomination for justice of the Supreme Court. His imperious disposition made many enemies. See GARFIELD; CIVIL SERVICE.

Connaught, Arthur, Duke of (1850-), an English soldier and statesman, governor-general of Canada. He is Prince Arthur, the third son of Queen Victoria. Before coming to Canada as successor to Earl Grey, his Royal Highness was first and foremost a soldier. He has served in various positions of high rank in the British Army, and with his wife, Princess Louise of Prussia, has traveled extensively in out-of-the-way places, spending comparatively little time in England. Their three children were reared with great simplicity. When the Duke and the Duchess of Connaught went to India, where he was to act as field-marshal, the children were left with Queen Victoria, who was living then in great seclusion. The youngest child, Victoria, is now of age. The duke is noted for his reserve, which some persons attribute to extreme shyness, his hatred of publicity, and his great executive ability.

Connecticut, kŏn-nĕt'ĭ-kŭt, a New England state. It lies on Long Island Sound, between New York and Rhode Island. With the exception of two jogs in favor of Massachusetts, the northern boundary is formed by the line of 42° 30′ north latitude. The general outline of the state is an oblong, 88 miles in length, and of irregular width. Area, 4,820 square miles. Capital, Hartford. Eight counties. Population in 1920, 1,380,385. Two railroads with 2,065 miles of track. The name of the state is that of its principal river. It is a Pequot word, meaning the long river. Nicknames are "The Wooden Nutmeg State," "The Land of Steady Habits," "The Constitutional State."

The first account of the country was published by Hudson and Adrian Block, Dutch navigators. Plymouth Colony established a trading post on the Connecticut in 1633. Settlement was made at Weathersfield in 1634, at Windsor in 1635 and at Hartford in 1636 by colonists from Massachusetts Bay. Trouble ensued with the Pequot Indians, but, as the natives were armed at best with bows and arrows, midnight massacres and scalping were soon brought to an end. In May, 1637, Captain Mason and a band of ninety men armed with guns surprised the natives in their stockade at Groton, set fire to their wooden stronghold, burned them out like rats, and killed six hundred men, women, and children who endeavored to escape. The pious chroniclers report a cessation of hostilities.

In 1639 the settlers, finding themselves beyond the jurisdiction of Massachusetts, adopted a constitution, said to be the first ever prepared for their own use by a self-governing people. Deriving all its authority from the people, it contained many democratic features, such as annual elections, and vote by ballot; but, upon the whole, it was made up by selecting the more liberal of the practices actually in use at the time in the Massachusetts Colony. In 1662 a charter was granted the colony by Charles II. Much against its will New Haven Colony on the sound was included. This charter was suspended for a short time during the administration of Andros. Otherwise it served as the fundamental law of Connecticut until 1818. The oft quoted Blue Laws of Connecticut are now admitted to have been in part a mere literary forgery.

Connecticut has a record for patriotism. A full quota of men and money was supplied during the intercolonial wars. At the outbreak of the Revolution Jonathan Trumbull of Connecticut was the only colonial governor in full accord with the American patriots,—the only one who was not asked or forced to resign. He sent forward men and provisions in a most energetic manner, and stood on such intimate terms of confidence with Washington that the expression, "Brother Jonathan," is said to have arisen from Washington's having referred to him, then governor, in that familiar, trustful way. About the only reason for regret in this connection is the circumstance that Benedict Arnold was a native of this state, a fact that resulted in the disgraceful raids of Tryon and of Arnold himself, when seaboard towns were burned and the rules of civilized warfare disregarded. Although the War of 1812 ruined a prosperous trade with the West Indies, local opinion was by no means unitedly in favor of the Hartford Convention of 1814-15. During the Civil War, Connecticut furnished 54,882 volunteers, far more than her share.

From the first, the state has been noted for frugality, industry, and thrift. Agriculturally, the state may be divided into four regions. A sandy shore along the sound; the valley of the Connecticut; the uplands east of that river; and the region west of the valley. The valleys of the Connecticut and the Housatonic are noted for the production of a cigar tobacco. Small fruits, orchard fruits, and vegetables are raised for city markets. Dairying is an important industry.

An unprofitable copper mine, opened at Granby in 1705, was the beginning of the manufacture of brass, in which the valleys of the Housatonic and Naugatuck now lead the world. The Yankee peddler, with his tin and wooden ware, is a product of the state, dating from 1770. It is but fair to say he peddled far better wares than are now on the market. The cannon, balls, chains, wagon tires, and camp kettles of the Revolution were made here from native ore found at Salisbury. Paper, American clocks, watches, sewing machines, vulcanized rubber, and electro-plating owe their early reputation to Connecticut. In proportion to population, more patents have been issued to the inhabitants of Connecticut than to the inventors of any other state.

Manufacturing has become the leading industry. Ships, cotton goods, locks, cutlery, timepieces, thread, sewing machines, bicycles, carriages, hats, and brass and copper wire, are leading articles of manufacture, amounting in all to about one-half billion dollars a year.

In return for relinquishment of territory in Wyoming Valley, Connecticut received a grant of 3,500,000 acres of public land in northeastern Ohio, including the present site of Cleveland. This tract was known as the Western Reserve. About half a million acres was given to those who suffered from the British during the Revolution; the remainder was sold to settlers for the benefit of the Connecticut school fund, now in excess of two million dollars. The income from this fund, over one hundred thousand dollars, is turned over to the towns to assist in financing the common schools. Higher education is provided for by endowed institutions, chief among which are Yale University at New Haven, Wesleyan at Middletown, and Trinity at Hartford. The state maintains an agricultural college at Mansfield and four normal schools at Danbury, New Britain, New Haven and at Willimantic. A newer institution of higher education is the Connecticut College at New London.

STATISTICS. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	4,820
Population (1920)	1,380,385
New Haven	162,390
Bridgeport	143,580
Hartford	138,036
Waterbury	91,410
New Britain	59,316
Stamford	35,086
Meriden	29,842
Norwalk	27,557
New London	25,688
Norwich	22,304
Bristol	20,620
Danbury	18,889
Manchester	18,370
Middletown	13,638
Members of state senate	35
Representatives	258
Salary of governor	$5,000
U. S. representatives	6
Presidential electors	8
Assessed valuation of property	$1,278,696,735
Bonded indebtedness	$13,000,100
Acres under plow	988,252
Corn, bushels	2,530,542
Wheat, bushels	11,869
Oats, bushels	273,804
Rye, bushels	137,692
Tobacco, pounds	28,110,453
Horses	46,341
Mules	416
Cattle	195,318
Sheep	22,418
Swine	52,372
Miles of railway	2,068
Manufacturing establishments	4,251
Capital invested	$517,547,000
Operatives	210,792
Raw material	$257,259,000
Output of manufactured goods	$490,272,000
Output of mines and quarries	$1,375,765
Teachers in public schools	5,491
Pupils enrolled	197,852
Percentage of male teachers	6.5
Average monthly salary of men teachers	$125.01
Average monthly salary of women teachers	$57.87
Average annual expenditure per pupil	$34.98

Connor, Ralph. See GORDON, CHARLES WILLIAM.

Consciousness, a term for which no satisfactory definition has been stated. When life or mind is aware of itself it is self-conscious. No one knows whether or not the lower animals are self-conscious, though many of their responses are strikingly similar to those the human animal makes during certain highly self-conscious experiences. An intelligent dog seems often to be aware of his own experiences. No one doubts that the lower animals are conscious, but none can say how far down in the scale of life consciousness runs. The grass under his feet may be conscious for anything man really knows about it.

But the word consciousness is popularly used instead of self-consciousness. A person is said to "lose consciousness," or to "become unconscious" during sound sleep or when in a faint. What is lost at such times is self-consciousness. The stream of consciousness does not stop; it merely runs at slower rate or lower ebb. This lower ebb, when mind is not aware of itself, has been called the sub-conscious experience. Consciousness then is the larger term; it includes both self-conscious and the sub-conscious. Many of the vital processes seem to depend upon the stimulus or direction of the sub-conscious mind, so complete loss of consciousness would probably mean death of the body.

Man knows nothing about consciousness as a thing apart from bodily activity, particularly activity in the more complex nervous structures of the body. The materialist has declared there is no mental activity, or consciousness, without vibration or change in living nervous structures. While he cannot prove this, he can produce evidence to show that the more complex nerve centers are very active whenever the mind is aware of itself, that this activity subsides as self-conscious experiences cease, and that certain lower centers are mostly involved when mind sinks to the sub-conscious. Destruction of the body may mean annihilation of consciousness. This is one of the questions of the ages.

Just when a human being becomes self-conscious no one knows. Many impressions are received subconsciously long before a child is aware of itself, perhaps even before birth. It is not so important to know when a child becomes self-conscious as it is to remember that he is *always* conscious, that even during sleep sub-conscious mind is recording impressions which may help to determine responses he will make during his most self-conscious moment. Unruly children have been helped to better living by means of positive suggestions given during their sleep. Much usually attributed to organic or physical inheritance is due to sub-conscious impressions. On the other hand it is worth while to know that when the mind is aware of itself it can give suggestions or directions which will affect the activity of the sub-conscious experience. Since sub-conscious mind controls vital functions, the right self-suggestions accompanied by belief in their power will improve health and increase mental activity. Many minds through fear of illness and expectation of failure are unintentionally giving themselves negative suggestions. Such suggestions determine sub-conscious attention, for attention is merely the focus of consciousness. A change in attention means a change in the stream of consciousness. Whatever the self-conscious mind attends to and expects, the sub-conscious seems bent upon bringing to fruition.

Conservation, a movement to safeguard the nation's natural resources "for the greatest good to the greatest number of people for the longest time." In 1908 public attention was drawn to the rapid depletion of our natural resources and to the persistent attempt of large corporations to gain control of those still in the government domain, when President Roosevelt called a convention of the governors of all the States to consider measures for protecting these resources. Soon after this convention, the National Conservation Commission was created by the President. This commission was divided into four sections—forest resources, mineral resources, land resources and water resources. The National Conservation Association was organized in 1909 and maintains an office at Washington. It holds annual

conventions and its recommendations are influential in securing favorable legislation. Over 234,000,000 acres of public domain, including forest lands, phosphate lands and valuable water power sites have been placed beyond possibility of private control, and wasteful methods in coal mining and lumbering have been checked. See FORESTRY; IRRIGATION.

Conservation of Energy. See ENERGY.

Conservatives, in England and Canada, the name applied to the political party that believes in keeping in force those governmental measures which have been tried and proved successful. See LIBERALS.

Constance, German **Konstanz,** a city of Baden. It lies at the northwest end of Lake Constance at the outgo of the Rhine. Constance is an old city. In the sixth century it became the seat of a bishopric, which was suppressed in 1802. Constance was a free town of the empire down to 1548. After the Reformation it was subject to Austria; since 1805 it has been a town of Baden. Population, 17,000. There are cotton mills and important manufactories of chemicals and carpets. There is frequent steamship service between Constance and other lake ports. There are several lines of railway. Constance is the center of considerable trade. The city is situated beautifully on the immediate shore of the lake. Interest centers in the old buildings. The surrounding scenery is beautiful. Ranges of the Alps are in full view, but interest centers in historical buildings. The cathedral is a Romanesque edifice with a Gothic tower. An open spire, provided with a platform, gives the climber a broad view of the town and lake. A town hall, ornamented with frescoes relating to the history of Constance, contains the municipal archives. Among other municipal documents there are 2,800 charters of the Reformation period. The museum, an old guild house of the butchers, contains a collection of lake antiquities and specimens of natural history. The Kaufhaus, or Merchants' Hall, was erected in 1388. It contains a large hall, 156 feet long and 105 feet wide, where the great Council of Constance met, 1414-1418. The house in which Huss was arrested is marked by a portrait tablet. The room in which he was confined is pointed out in the old Dominican monastery now converted partly into a hotel. A large stone slab in the floor, fifty feet from the entrance of the cathedral just mentioned, contains a white spot which always remains dry when the rest is damp. Tradition claims that this is where Huss stood when sentenced by the council. A large boulder with inscriptions marks the spot where Huss and Jerome suffered martyrdom. See HUSS; JEROME OF PRAGUE.

Constance, Lake, a fine body of water on the borders of Switzerland, Germany, and Austria. Length, 40 miles; width, 9 miles; greatest depth, 912 feet; altitude, 1,385 feet. The Rhine flows through the lake from southeast to northwest. The waters of the lake are of a beautiful pale green hue, and are well stocked with fish. The waters are subject to a sudden rise due to some underground cause. In 1770 a rise of twenty feet inside of an hour is on record. Commodious steamers ply on the lake. As the lake is neutral, passengers crossing it from one country to another are liable to have to go through the formality of having their baggage examined. Of the numerous towns on its shores, the old town of Constance, situated at its outlet, is most noted.

Constantine, surnamed the Great. Emperor of Rome from 306-337 A. D. Under his rule the warring and seditious elements of the Roman Empire were subdued. His reign is noted for two events of importance, —the adoption of Christianity as the regular religion of the empire, and the removal of the capital to Constantinople. In 313 he issued the Edict of Milan. "We grant likewise to the Christians and to all others, free choice to follow the mode of worship they may wish, that whatsoever divinity and celestial power may exist may be propitious to all that live under our government." This edict put an end to the terrible persecutions of the Christians, and marked the beginning of atrocious persecutions by them; showing that human nature cannot be changed by an edict. In 328 Constan-

tine ordered the old city of Byzantium rebuilt. He named the city for himself, Constantinople, and removed the seat of his government thither. The arch of Constantine, erected in that emperor's honor in Rome 315, is one of the best preserved of Roman antiquities.

Constantinople, until 1918 the capital of the Turkish Empire, Latitude, 40° N.; longitude, 28° 59′ E. It is situated on the European side of the Bosporus, between the Sea of Marmora and an inlet of the Bosporus, called the Golden Horn. The city has a water frontage on three sides of eight or nine miles in extent. The city proper thus occupies a triangular peninsula. Extensive suburbs are located across the Golden Horn and on the Asiatic side of the Bosporus. The city contains a great number of fine mosques with dome-shaped roofs, the most famous, though not the largest, of which is the mosque of St. Sophia. It has twenty domes. It is said to be the most ancient Christian church in existence; but it was converted into a Mohammedan mosque in 1453. Its walls are decorated with frescoes. Another feature of the city is the bazaars. They remind the traveler of booths at the European fairs. The Grand Bazaar consists of several long avenues arched with brick and lighted by apertures in the vaulted roof. Cross-legged Turks sit smoking their pipes, waiting for custom. They ask several prices for their goods, but are willing to take what is right. Ribbons, gems, clothing, perfumes, embroidery, lace, silk, rugs, in fact all sorts of oriental goods, are exposed in a bewildering and attractive array. One needs to leave his money at the hotel, in order not to spend it. Perhaps the chief center of attraction, to European visitors at least, is the palace or seraglio where the Sultan lived. It commands a magnificent view of the Bosporus, the Golden Horn, and the cypress-covered hills of Scutari. With its grounds, it occupies a large area, including gardens and groves. The sultan's many wives lived in the harem, surrounded by beautiful landscape gardens. The principal entrance is known as the Sublime Porte, a term not infrequently applied to the sultan himself. It means simply the high door, or lofty entrance. Aside from the attractions mentioned, the city is a tangle of narrow, dark, incredibly filthy, ill paved streets, running in the most irregular fashion. The city is abundantly provided with good water from public fountains, whence it is carried into the houses for domestic purposes.

The Golden Horn is the port of the city. It is about six miles long and half a mile wide. Vessels from the Black Sea, the Mediterranean, and London crowd its wharves. Forty-two vessels on an average come in daily. Immense quantities of wheat, iron, furs, tallow, lumber, cotton cloth, woolen goods, silks, jewelry, groceries of various sorts, furniture, oriental rugs, wool, and dyestuffs change hands here annually.

Constantinople is connected by rail with Vienna, Paris, and other capitals of continental Europe. A railway from the other shore of the Bosphorus extends to Bagdad on the Persian Gulf, and another extends towards Mecca. Since the revolution of 1908 and 1909, the city has been improved. Streets have been broadened and paved, many old wooden buildings have been replaced with concrete structures, and the city has been generally cleaned up and made more sanitary. During the World War, the Allies attempted to capture the city, but were unsuccessful and it was not entered by them until Turkey surrendered.

See CONSTANTINE; TURKEY; BOSPORUS.

Constellation, a group of stars. One observing the sky on a clear night cannot fail to observe that the bright stars form more or less noticeable groups. The best known to young people is perhaps that of the Great Dipper, the outer stars of which point to the pole star. The belt of stars through which the sun appears to move annually was divided into twelve groups or constellations, probably by the Babylonians, certainly prior to the earliest extant history. The earliest works on the subject, of which we have any knowledge, were written in the fourth century before Christ. The earliest astronomical writing that has been preserved is a star catalog called the Almagest. It was prepared by Ptolemy, the Greek professor of astronomy at Alex-

andria, about 120-150 A. D. His catalog contains over a thousand stars divided into forty-eight constellations. This ancient grouping has never been disturbed seriously. Astronomical maps of the present day adopt the groups and use the names given by Ptolemy. The principal additions are those in the southern hemisphere, which were not known to the Greek writer. The entire sky has now been plotted off and given names. In all, the additions have brought up the number of constellations to eighty-nine. Most of Ptolemy's names were derived from Greek mythology.

Constitution, the fundamental law of a country. In American usage, the body of laws that define and limit the powers of government. It is a principle of modern constitutional law that whatever power or authority is not granted expressly to the government by constitution is retained by the people. The older, we may say, for example, the Russian, theory is that all authority or privilege not granted to the people is retained by the sovereign. Sometimes a constitution, as that of Canada or the United States, is written; sometimes it has grown up, largely by general understanding, as in England. It is very important that a country should have a constitution. Until very recently Russia was the most prominent example of a country without a constitution. The laws of that country were such as the emperor, acting under the advice of his intimate friends, might wish to make. They could be changed or suspended at his will. If he or his officers ordered cannon to be discharged into the peasants on the streets of St. Petersburg, there was no law of the land to bring the offenders to account. If the czar was satisfied, no one could interfere by law; while if a nihilist threw a bomb under the carriage of a prince, and blew him into eternity, the czar had full authority to order the wretch executed, with or without trial, and from his decision there was no appeal. Without a constitution, the crimes of a ruler cannot be punished legally by the people. Absolute rulers have it in their power, not only to punish, but to determine whether the acts of the people are legal or illegal.

The Constitution of the United States was drawn up by a convention of fifty-five members, representing twelve of the thirteen states. It met in the city of Philadelphia, and was presided over by George Washington. The convention was called to meet May 14, 1787, but a quorum was not secured until May 25th. Its work was completed September 17th. The legislature of Delaware was the first to ratify the Constitution. The adoption by New Hampshire, in June, 1788, made the Constitution operative.

By the Constitution of the United States the government is divided into three departments, the legislative, executive and judicial. The legislative department, or Congress, consists of two houses, the Senate consisting of two senators from each state chosen by the legislature of that state for a term of six years, and the House of Representatives chosen by the electors of those states for a term of two years, the number from each state being proportioned to the population. Congress has the power to make laws, levy taxes, declare war, and exercise other powers not forbidden to it by the Constitution.

The executive power is vested in a president chosen for four years by an indirect system known as the electoral college. The vice-president is chosen in the same way, but has no power in the government except in case of the death or disability of the president. The president is commander-in-chief of the military forces of the nation, administers the laws, and appoints diplomatic officers, supreme court judges and other officers, by and with the consent of the Senate.

The judicial power is vested in a Supreme Court, and in such other inferior courts as Congress may establish. The Supreme Court has jurisdiction over all legal cases arising under the Constitution; over cases in which the United States is a party; and over cases between the states.

The states ratified the Constitution on the dates given below:

1. Delaware .....Dec. 7, 1787
2. Pennsylvania .....Dec. 12, 1787
3. New Jersey .....Dec. 18, 1787
4. Georgia .....Jan. 2, 1788

5.	Connecticut	Jan. 9, 1788
6.	Massachusetts	Feb. 7, 1788
7.	Maryland	April 28, 1788
8.	South Carolina	May 28, 1788
9.	New Hampshire	June 21, 1788
10.	Virginia	June 26, 1788
11.	New York	July 26, 1788
12.	North Carolina	Nov. 21, 1789
13.	Rhode Island	May 29, 1790

The first president elected under the Constitution assumed office at the city of New York, on the 30th day of April, 1789. This Constitution consisted of fifteen articles. The first ten amendments went into force September 17, 1791. The eleventh became effective in 1798; the twelfth in 1804; the thirteenth in 1865; the fourteenth in 1868; the fifteenth in 1870; the sixteenth and seventeenth in 1913; eighteenth and nineteenth in 1920.

Much has been said as to the sources of the Constitution. Fanciful comparisons have been drawn with the institutions of Greece, Venice, Rome and Switzerland. No less a speaker than Gladstone has assumed that the Constitutional Convention did original work, and drew up a new constitution without a definite model in mind. The plain facts are that the leaders of the Revolution did the most natural thing in the world. They followed the unwritten constitution of England, to which they had been accustomed, and the constitutions of the several states which had grown out of two centuries of colonial self-government.

Consul, a commercial agent of a government. The consular service of the United States began in 1780. The present consular force includes consuls general, consuls, vice-consuls, clerks, interpreters, and other subordinates. It consists of over a thousand persons. They are appointed by the president, with the advice and consent of the Senate. The consular service is in charge of the secretary of state. The salary of a consul general, that is to say, the consul in a metropolis, is $12,000 a year, from which the salary ranges to $3,000. The salary of consuls varies from $2,000 to $8,000 a year. Those holding the lower salaried positions are permitted to engage in business for themselves. There were in 1911, 69 consuls general and 236 consuls. The total salary list of the consular service is over $1,600,000. Fees collected by the various offices, however, and turned into the United States treasury, reduce the net cost to about one-twelfth of that amount. In 1880 the United States government commenced the publication of a periodical called *Consular Reports,* giving information sent in from the various consular fields. It is designed primarily for the benefit of merchants; but is sent free to those who seem likely to make good use of it. It contains a great deal of interesting information. School libraries should have it.

The duties of a consul are of a varied nature. He is supposed to look after the welfare of American seamen, and to settle disputes between captains and their crews. He inspects the passports of American travelers, and assures the foreign government that they are genuine. He looks after the property of Americans who die abroad. He certifies that ships sailing for this country are in a sanitary condition, and that they carry nothing infected with plague. Much of the merchandise bought abroad must pay customs duty on reaching this country, according to its value. The consul examines the bills of lading at the ports where the goods are bought and certifies that the prices named are those, in his judgment, actually paid; thus protecting the United States from imposition through false bills. He upholds the dignity of the United States. He is secure from arrest, and may display the national flag over his door. Theoretically, his office is American soil. Americans abroad may be married in his presence and receive a certificate from him to the effect that the ceremony was performed within the jurisdiction of the United States. The usefulness of a consul depends entirely on his character and ability. Sometimes he is in position to do more for the American flag than falls to the lot of the ordinary minister or plenipotentiary.

In China and Siam, the consul sits with the local judge in trying cases to which Americans are a party. In Persia and other countries, Americans are subject to the jurisdiction of the United States consul, instead of to the local courts. These matters are, of course, arranged by treaty. We

accord the same privileges to consuls of other governments that they accord to ours. See AMBASSADOR.

Consular Service. See CONSUL.

Consumption, a wasting away of the lungs, due to the attacks of bacteria. The term is exchangeable with tuberculosis. A more modern term is the white plague. Children of consumptive parents are not born with the germs of consumption in their lungs, but they may inherit weak lungs. If, for any one of a number of reasons, the lungs are weakened and the bacterium of consumption, or tuberculosis bacillus, is taken into the system, the disease is likely to become seated. Its progress is denoted by coughing, raising, and spitting, hectic fever, weakness, and emaciation. A damp climate is favorable to the growth of the disease. Want of cleanliness, bad ventilation, match making, coal mining, glass blowing, weariness, long hours, bending over at work; in short, any condition, occupation, or attitude that lacerates, cramps, or weakens the lungs renders one liable to attacks of the bacillus. While a perfectly healthy person is not subject to consumption, it is equally true that one in condition to take the disease cannot do so unless the bacteria from a consumptive person are taken into the system. Patients cannot be too careful, therefore, in the matter of expectoration. It is estimated that a patient may cast off 2,500,000 germs in a day. In case a consumptive spit on the sidewalk, or on the floor of a street car, depositing germs, it is likely that in a few hours they may have dried up and be floating about in the air, ready to be drawn into the lungs of some person in physical condition to become infected. The mischief is done. Tuberculosis is frequently acquired,—taken into the blood,—through the milk of infected cows. If conditions are favorable the germs soon settle in the lungs. About 120,000, or possibly 160,000 deaths occur annually in the United States from consumption. One authority hazards the statement that this disease is the cause of one out of every six deaths the world over. The period between the ages of fifteen and thirty seems to be the time of greatest danger. See DISEASE; BACTERIUM; KOCH.

Continental System, a plan formulated by Napoleon in 1806-07, to destroy England's commerce. Napoleon's attempt to injure England by way of India had failed in the Egyptian campaign; the attempted invasion from Boulogne had resulted in the destruction of the French Navy at Trafalgar, 1805; the only effective means left was to destroy England's commerce. After Napoleon defeated Prussia at Jena and entered Berlin in 1806, he issued his famous Berlin Decree by which he declared all British ports in a state of blockade, and all Britons found in France or its dependencies, prisoners of war. Great Britain immediately retaliated by an order prohibiting neutral vessels entering the ports of France or of any country allied with or dependent upon France. Napoleon then issued the Milan Decree whereby all vessels sailing from or to British ports, colonies, or dependencies were declared prizes of war. As Napoleon at that time controlled practically all of western Europe, it meant the destruction of legitimate commerce; smuggling was therefore enormously increased, and it is said that Napoleon's soldiers, themselves, wore clothing smuggled from England. The system was abolished with the fall of Napoleon.

Continuation Schools. See SCHOOLS.

Contraband, articles in which international law forbids traffic during a time of war. A neutral nation is forbidden for instance, to sell either party to a war guns, ammunition, soldiers' clothing, or the like. If a merchant undertakes to supply these articles he does so at his own risk. The flag of his country does not protect him. A British or an American ship, endeavoring to carry contraband goods to the Japanese or to the Russians during the late war between these peoples, did so at the risk of the owner. Quite a number of ships were captured and confiscated. During the Civil War the Union troops were puzzled to know what disposition to make of slaves who came into their lines. The war was ostensibly for the preservation of the Union —not to free slaves. General B. F. Butler refused to return the slaves to their Southern masters on the ground that they were "contraband of war." This position

had a good legal basis, since the Confederates used the negroes to build fortifications, raise food for the armies in the field, and as teamsters and laborers for the armies. At the same time, the chief value of this use of the phrase was in the excuse it provided for not surrendering the fugitives. The term "contraband" was taken up by the newspapers and it clung to the colored people until the war closed.

Conundrum, a puzzling query, the answer to which involves a turn of wit, usually a pun. A conundrum proposes usually the discovery of a resemblance between things quite unlike, or the discovery of some odd difference between similar things.

Q. Why is a blind beggar ungrateful? A. Because he would be glad to see the giver hanged.
Q. How may a husband be made tender? A. By roasting.
Q. Why do white sheep produce more wool than black ones? A. Because there are more of them.
Q. Why does a duck take to the water? A. For divers reasons.
Q. What state is round at each end and high in the middle? A. Ohio.
Q. When is charity like a top? A. When it begins to hum.
Q. What drums are never beat? A. These conundrums.

Convict. See PRISON.

Convict Labor, the employing of prisoners in productive work whereby they are kept from idleness and earn the cost of their living. There are three plans followed in the United States, the lease system, the contract system, and the public account system. The lease system gives the convicts over to contractors, who are thereafter responsible for their care and detention. There are two forms of this system. In the one the state furnishes the material and tools and the work is supervised by the contractor; in the other, the piece-price system, this arrangement is reversed and the product is bought at a fixed price by the contractor. The public account system, which is growing in favor, has all material, tools, etc., provided by the state; supervision is by state officials, and the profits go into the state treasury. The lease system has little in its favor except that it often nets considerable sums to the state, for prisoners are often inhumanly treated, frequently escape, and come under the influence of no system of reform. It is used only in a few of the southern states. The contract system is economical but sometimes interferes with prison discipline, particularly when an outside overseer is in charge. The public accounts system avoids this difficulty, though it often places the warden in a difficult position—he is tempted to strive rather for financial success than for the reformation of his prisoners. The whole system of convict labor has met with opposition from both employers and labor unions, on the one hand because it affords the contractor using cheap convict labor an unfair advantage, on the other because it tends to lower wages. See PEONAGE; PRISONS.

Convolvulus. See MORNING GLORY.

Conway Cabal', a conspiracy formed in 1777 among officers of the American colonial army for the purpose of depriving Washington of command. The leading spirit was Thomas Conway from whom the intrigue takes its name. Gates had won a signal victory at Saratoga. By comparison Washington seemed far too inactive in the eyes of Conway and his friends and they planned to promote Gates to supreme command. The plot was discovered and broken up.

Cook, James (1728-1779), an English navigator. He was born in an inland part of Yorkshire, but went to sea when a boy. He entered the royal navy in 1755. Four years later he commanded a ship in the squadron sent to the Gulf of St. Lawrence, and distinguished himself in the operations against Quebec. His seamanlike qualities and his diligence so commended him that he was given the command of three important scientific expeditions.

In 1768 his ship conveyed a scientific party sent out to the Pacific Ocean to observe the transit of Venus, June 3, 1769. Cook and his party took advantage of the opportunity to visit New Zealand and explore the eastern coast of Australia. This is the basis of the large territorial possessions of England in that quarter. Interest in the Antarctic region having been aroused by the published accounts of the voyage, Captain Cook was sent with two

ships and a second party to coast the great ice barrier described in the article under ANTARCTIC CONTINENT. His investigations of ship's scurvy, the great pest of long sea voyages, and the use of vegetables as an antidote for salt diet, procured his admission to the Royal Scientific Society of which his fellow travelers, scientific men, were members.

Captain Cook's third voyage was made for the purpose of ascertaining whether a passage existed between the Pacific and Atlantic oceans by way of the Arctic regions. He set out in 1776, the year of American independence, showing that, in the British mind, the American war was but an incident, not an engrossing struggle. He commanded his old ship, the Resolution, and a second ship, the Discovery. On his way he discovered the Sandwich Islands, and explored the western coast of North America, then unknown, as far as Kamchatka. The winter of 1778 was passed at Hawaii. When on the point of leaving, February 14, 1779, Captain Cook went ashore and attempted to seize the person of the king to hold him as a hostage for the return of a stolen boat. The natives, ordinarily inoffensive, became exasperated, and attacked the small party of Englishmen, killing the distinguished navigator before he could regain the protection of his boats. Cook's journal, supplemented by the accounts of his scientific associates, are among the most entertaining annals of discovery and scientific investigation. They are excellent reading. The expeditions he led reflect credit on the British name. The name of Cook is of frequent occurrence in any atlas of the Pacific and Antarctic regions.

See HAWAII.

Cooke, Jay (1821-1905), an American financier. He was a native of Sandusky, Ohio. In 1858 he founded the banking house of Jay Cooke and Company, of Philadelphia. When the Civil War broke out, and Lincoln called for troops and money, Cooke went about among his friends and raised $2,000,000 for immediate use. He was to the Civil War what Robert Morris was to the Revolution. He was entrusted with placing the immense loans needed by the government, and succeeded in raising the amount of $2,000,000,000, a feat unequaled in the history of finance. His charges for the work were moderate. At the close of the war his firm undertook to furnish the means to build the Northern Pacific railroad. Jay Cooke was president of the road. His firm failed in the hard times of 1873, precipitating a panic. Cooke afterward made himself comfortable by wise investments in Western land, but he made no effort to reëstablish himself as a leader in finance. His reputation is that of a genial, upright, patriotic man—one whom his neighbors liked to see prosper.

Cooke, Rose Terry (1827-1892), an American poet and novelist. She was born in Connecticut. Her first volume of poems was published in 1860. She was one of the contributors to the *Atlantic Monthly* in the early days of that magazine. Her stories treat of New England life. *Happy Dodd, Steadfast,* and *Huckleberries,* may be mentioned among her prose writings. *The Two Villages* is the best known of her many poems.

Cookery. See DOMESTIC SCIENCE.

Coolidge, Susan, a pseudonym of Miss Sarah Chauncey Woolsey. See WOOLSEY, SARAH CHAUNCEY.

Coon. See RACCOON.

Cooper, one engaged in the business of making barrels, kegs, firkins, casks, butts, or hogsheads. The upright pieces forming the sides of cooperage are called staves. The swelling or bulge at the middle is formed by making each stave a little wider in the middle than at the ends. A skillful cooper shaves his staves, cuts out his heads, and makes the hoops all so exact that when he sets up the staves, puts in the heads, and drives on the hoops, the different parts are a perfect fit without the removal of a shaving. The tapering of the barrel enables the hoops to be driven on tight. The surface, being curved on the principle of an arch, is very much stronger than the same amount of material in the shape of a box. If the staves shrink a little they can be tightened by driving up the hoops. Although the barrel is not a convenient receptacle for storage in a car or ship, no substitute has been found. Wine casks and beer kegs are made of great

thickness to withstand the pressure of the fermenting liquid. Casks for vinegar, oil, and syrup require to be strong. Oak is the favorite material for all such cooperage. Nowadays cooper shops employ a great deal of machinery. In the making of flour barrels the only work done by hand is the handling of material and the setting up of the barrels. One of the sights of industrial Minneapolis is the continuous succession of flour barrels coming down a shute from the cooper's shop into the large racks in which they are drawn by two-horse teams to the mills. The driver does not think he has a load until his rack contains 175 barrels. The last United States census reports 2,146 cooper shops, with 22,938 wage earners, and an annual output valued at over $40,000,000. In 1908 a careful writer stated that the American demand for tight cooperage, chiefly from the distilleries, required the yearly manufacture of 267,827,000 staves and 17,774,375 headings, valued at over $12,000,000.

Cooper, James Fenimore (September 15, 1789 - September 14, 1851), the author of the *Leatherstocking Tales*. The Coopers were a Quaker family from Stratford-on-Avon, Shakespeare's birthplace. Father Cooper was a New Jersey judge. He was a man of culture, wealth, and energy. He sat in Congress and was a leading Federalist. Mrs. Cooper was of Swedish descent. James Fenimore was born at Burlington, New Jersey, the youngest but one of twelve children. When he was a year old the family moved to what was then the western frontier of New York, and founded the village of Cooperstown on Otsego Lake. Here they lived for six years in a log house. Judge Cooper secured a large tract of land, and in time built what was known as the "Hall." The old home is described in *The Pioneers* as Templeton. James came into contact with the Indians, and saw much of primeval life in the forests and on the rivers and lakes of that beautiful region. He was fitted for college at Albany, and was sent to Yale at the age of thirteen. Ere graduation day he was dismissed in disgrace for engaging in college pranks. He then went to sea, and served as a midshipman and lieutenant. In 1811 he married a Miss De Lancey, sister of the Bishop of Western New York. Her family were Tories. Young Cooper left the navy, thus taking no part in the War of 1812. For ten years he followed the profession of a gentleman farmer.

Through reading English novels he became fired with the ambition to write. His first production was *Precaution,* an English society novel. It was received with some favor in England, but not at home. In 1821 he published *The Spy: A Tale of the Neutral Ground.* Inasmuch as no publisher was willing to risk an American novel, Cooper published it at his own expense. *The Spy* made Cooper famous on both sides of the Atlantic. It was translated into all the modern languages of Europe, and even into Arabic, Russian, and Persian. For ten years he wrote rapidly. From 1826 to 1833 he resided abroad at Paris, Berne, Florence, Naples, and Rome. Among his acquaintances were Sir Walter Scott and the Marquis Lafayette. Returning to New York he got into legal controversy with his neighbors relative to the use of picnic grounds which his father had granted to the public on certain conditions not complied with. Cooper's life was embittered by local feuds. At death he enjoined his family to furnish no material for a biography.

Cooper rests in the churchyard of Christ Church by the side of his wife. A monument in Lakeside Cemetery near by was erected in his honor. It consists of a column surmounted by a figure of Leatherstocking. Cooperstown is now given quite over to his memory. The steamers on Otsego Lake are named for characters in the *Leatherstocking Tales.* Otsego Rock is noted as the traditional meeting place of Indians. Leatherstocking Falls and Leatherstocking Cave are pointed out to tourists as places of literary interest.

Cooper's experience in the navy furnished him the material for *The Red Rover* and other sea tales. His fame rests, however, on *The Spy* and the *Leatherstocking Tales.* The latter should be read in the following order: *The Deerslayer, The Last of the Mohicans, The Pathfinder, The Pioneers,* and *The Prairie.* Mark Twain

and other critics have been pleased to make merry over absurdities, contradictory statements, and marvelous extrications from impossible situations. Indeed, there is abundant opportunity for such remarks, but Cooper is none the less first of American storytellers. He wrote at the same time Walter Scott was writing, and almost as rapidly. The *Leatherstocking Tales* are in their way as original, as distinct, and as great an achievement as the *Waverley Novels*. As characters of the rifle, the forest, and the canoe, Hawkeye and Uncas are not surpassed.

There was a brilliant story-teller in Cooper, but there was also a prosy moralist and reformer; and when circumstances called the latter to the front, it went hard with the story-teller.—Bronson.

To the French and the Germans, to the Italians and the Spaniards, James Fenimore Cooper is as well known as Walter Scott. Irving was the first American writer of short stories, but Cooper was the first American novelist; and, to the present day, he is the one American novelist whose fame is solidly established among foreigners.—Brander Matthews.

Probably the best service a friend can do a friend is to point out his faults to him; and there is nothing for which America owes more gratitude to Cooper than for his faithfulness in this respect.—Noble.

It must not be forgotten that the literary world is Cooper's debtor for a new sensation. Leatherstocking and Long Tom Coffin are his invention. They may seem artificial now, but they were vivid characters once, and the most superior of us read their stories with breathless interest.—Shaw.

He has drawn you one character, though, that is new,
One wild flower he's plucked that is wet with the dew
Of this fresh Western world, and, the thing not to mince,
He has done naught but copy it ill ever since.
—Lowell.

Cooper, Peter (1791-1883), an American inventor, manufacturer, capitalist, and philanthropist. He was a native of New York. He had a very meager common school education. His father was a hatmaker, and he himself learned the trade of coachmaking. Among his inventions were a cloth-shearing machine and various mechanical devices. He manufactured glue for many years. He constructed the first locomotive engine built in America. He took interest in the Erie canal, in the first Atlantic cable, and was the first to roll wrought iron beams for fireproof structures. In 1876 he received 100,000 votes as the presidential candidate of the Independent party. He will be remembered as the founder of Cooper Union, which see.

Cooper Union, or **Cooper Institute,** an industrial or technical school founded in New York City by Peter Cooper in 1854. Cooper gave nearly a million dollars for site, buildings, and endowment. Other members of the family have made various gifts which have been supplemented by Abram Hewitt and others. Andrew Carnegie has given $600,000. Instruction is given in engineering, electricity, chemistry, physics, astronomy, mechanical drawing, architecture, free-hand drawing, clay modeling, painting, music, literature, engraving, and pottery. The institute has a museum, an art gallery, a library of 40,000 volumes, and a well appointed reading room. The enrollment of students is between three and four thousand. Degrees are conferred in engineering by the Cooper Institute.

Coöperative Store, a store owned and managed in the interest of customers. What are known as coöperative stores had their origin in Rochdale, England. Twenty-eight weavers decided to make an experiment to better the wretched condition of working people. They laid aside two pence (four cents) a week each, until they had $140 in hand. They rented a ground floor room at the rate of $1 a week. After fitting it up they had $70 left to buy stock. They started with a little flour, a little butter, some sugar, and a sack of oatmeal. They opened December 21, 1844. They sold only to members of their association. They charged $5 admission, payable at the rate of four cents a week. To each purchaser, with each purchase, a brass tag was issued, entitling the buyer to a share, according to the size of his purchase, in whatever profits might be made. They kept open at first two nights a week; they bought for cash; they sold for cash. No clerk hire was paid. Those who managed the store charged nothing for their services.

They bought pure goods; they sold at going prices. The attractive feature of the store was profitsharing. The plan took well with the mothers; for there was a general feeling that shopkeepers lived at the expense of their customers. The store prospered. In the following March tea and tobacco were added to the stock. At the end of the first year there were eighty members. The stock on hand was worth $905, and the weekly sales amounted to $150. The store was kept open thenceforth five nights a week and Saturday afternoons. Butcher's meat was added.

The history of the Rochdale Coöperative store is exceedingly interesting. The business increased until the entire building was occupied. In five years' time there were 600 members. In the thirteenth year $400,000 worth of goods were sold. By this time, of course, a competent force of managers and clerks was employed at moderate salaries. All were stockholders in the enterprise. From the very first the store refused to handle any but the very best goods. It never cut prices. It never solicited custom. Working people in other cities adopted the plan. It was extended to many lines of business. In Great Britain there are now coöperative wholesale stores, printing offices, banks, building associations, insurance companies, farms, and factories. One coöperative printing office in Manchester covers a space as large as an ordinary city block. It is said to be one of the most efficient printing establishments in Great Britain. The stores resemble what are known as department stores in America. The largest establishments issue enormous catalogs. Charles E. Russell, who has written interestingly on the subject, enumerates a number of unexpected announcements to be found in one of these catalogs. Funerals, finished houses, automobiles, Chinese carvings, sharks' teeth, jams, jellies, preserves, chewing gum, violins, brass musical instruments, evening suits, and stuffed birds, are included in the list.

The Coöperative Store of Woolwich may be cited as an example of the extent to which the system has taken root. A central store, with ten branches, sells its members two and one-half million dollars' worth of goods a year. Four and one-half million loaves of bread are baked and supplied annually. The society has over 500 workingmen's houses for rent. All this in a town having a population of 40,000 people.

The coöperative movement spread all over Great Britain and crossed to the continent. Statistics for the opening of the year 1906 state that there are 8,000 cooperative societies and workshops in France and 800,000 members; 20,000 societies in Germany; 7,600 in Austria; 3,500, with 150,000 members, in Switzerland; 1,152 societies in Holland; 3,000 in Italy; 1,800 in Sweden; 731 in Servia; 300 in Spain. One company in Bale, Switzerland, has 20,000 customers, that is to say, members. An industrial society in Belgium has 17,000 members and one in Brussels, 20,000. It is difficult to get complete statistics for Great Britain. There are city associations and rural associations. There are 1,637 city coöperative stores, with 2,200,000 profitsharing patrons. They have a union, with a reserve fund of $12,000,000. Fully one-fifth of the entire population of England and Scotland is enrolled in the membership of the various coöperative associations. They are now so well supplied with manufacturing and wholesale facilities of their own, that they are practically independent of the manufacturing associations and trusts. It is now a matter of indifference to the coöperative stores whether the old handlers of the wholesale trade are willing to supply them. It is quite possible for members to supply their families with the necessities of life in which none but themselves have made any profits. In 1902 $45,000,000 in cash was distributed, that is to say, returned, to coöperative English stockholders.

In the United States coöperation has taken root chiefly in farming communities. A large number of creameries and farmers' elevators are managed on the coöperative plan. There are also a number of cooperative stores, but, compared with those of Great Britain, they are small affairs. In Rockwell, Iowa, for instance, a small farming town, nearly all merchandise, in-

cluding dry goods, clothing, groceries, lumber, grain, hardware, and stock is handled on the coöperative plan.

See GRANGERS; COMMUNISM; BUILDING AND LOAN ASSOCIATION; SOCIALISM.

Cheap railway transport and better conditions of sale can be obtained if the farmers will combine. What has hitherto been lacking is the desire for combination, though in a few localities that defect is being slowly overcome. What characterizes the agriculture of the Continent is the prevalence of combination. Alike in Demark, Germany, France, Italy, Holland, Belgium, Switzerland, Hungary, Finland, Poland, Servia, we find a network of coöperative societies all over the country—societies for the coöperative purchase of seeds, manures, implements, and machinery, coöperative creameries for the production of butter and cheese, egg-collecting societies, societies for the sale of fruit or grain, export societies, mutual insurance societies, and so on. This voluntary coöperative movement is generally fostered by the State, and has received much aid from landlords and religious bodies.—*Fabian Report.*

Coot, an aquatic bird with the habits of a duck. It is popularly called a mudhen. The American coot is fifteen inches in length. It has bluish, slate-colored plumage, a black neck and head, and an ivory-white bill. In place of being webbed, the toes are fringed with greenish, curiously scalloped flaps. The coot does not take to wing freely, but patters along for a hundred feet or so, striking the surface of the water with the feet. It is a skillful diver, and, being worthless for food, it is bolder than the wild duck. The female lays from eight to fifteen buffy white eggs in a nest built of grasses in the reeds of a freshwater marsh. The range of the coot extends from Alaska and Greenland to the West Indies. The bird referred to in the lines from Tennyson's *Brook,* "I come from haunts of coot," etc., is the European cousin of this bird. See GREBE.

Copal, kō′pal, a hard, clear, amber-like resin derived from various tropical trees. It is found also in the ground in a semi-fossil state, deposited, no doubt, by decaying timber. The best quality is obtained from pod-bearing trees on the east coast of Africa, Zanzibar, and Mozambique. Dissolved in hot linseed oil or in spirits of turpentine, it makes a clear, transparent varnish of great beauty and durability. See AMBER; LAC.

Copenhagen, kō-pen-hā′gen, the capital city of Denmark. Latitude, 55° 40′ 52″ N.; longitude, 12° 35′ 46″ E. It is situated chiefly on the island of Zealand, here separated from an adjacent island by a passage that affords fine anchorage and a harbor for shipping. With its suburbs, the city had a population in 1906 of 514,-134, approximating that of Baltimore. The name is Scandinavian and signifies merchants' haven. The city was founded in the twelfth century on the site of a fishing village. From the first it has risen rapidly. It became the capital of King Christopher in 1443.

Naturally enough, the city was never a favorite with the Hanseatic League, by which it was attacked several times. It withstood a siege from the Swedes in 1700. In 1801 the English under Parker and Nelson destroyed the Danish fleet off Copenhagen harbor to prevent its falling into the hands of Napoleon. The chief exports at present are such as might be expected from the metropolis of a dairy country—butter, cheese, beef, cattle, wool, and hides—as well as grain. There are ten distilleries, and many manufactories of porcelain ware, pianos, clocks, safety matches, sugar, and snuff. The trade with Iceland and Greenland is centered here.

The city is a literary and art center. A national university, with museums, an immense library and a botanical garden, is here. Unlike many European universities it is open to students of both sexes. The public buildings of the city are not remarkable, but they are rich in art treasures. The royal picture gallery does not rank quite with that of Dresden and Florence, but it contains paintings by such masters as Van Dyck, Rubens, and Rembrandt. A Thorwaldsen museum, built after the somber fashion of an Etruscan tomb, shelters the burial place and original models of the statuary of that famous sculptor. The round tower of Trinity Church is 115 feet high. Instead of a stairway it is ascended by means of a broad spiral roadway, up which Frederick the Great is said to have driven a carriage drawn by four horses.

The Museum of Northern Antiquities, a large collection of weapons, tools, utensils,

hunting gear, coffins, burial urns, church vessels, inscriptions, ornaments, armor, tombstones, etc., 40,000 in number, the greatest and most valuable collection of ancient man in existence, is here. The relics are admirably arranged in order of time. The flint period is illustrated by flint implements, bones and shells from the famous kitchen middens, or refuse heaps of prehistoric Denmark. Relics of the bronze period indicate that the art of casting, learned from the south, was well developed. The peat moor and bogs have yielded many iron articles, including Roman coins, indicating intercourse with that people at an early date. The exhibit is very complete down to 1660. Other museums or departments exhibit the antiquities of the rude nations of Europe, Asia, and Africa, as well as of the navigators known in history as the Vikings.

The vicinity of the city is attractive. The blue water of the sea, level drives, fine old beech forests, wayside inns, pleasure gardens, beautiful grounds, deer parks, and handsome residences render the neighborhood delightful.

See DENMARK.

Copernicus, ko-per′nĭ-kŭs, **Nicholas** (1473-1543), a celebrated astronomer. A native of Thorn, Poland. Of German ancestry. He studied at Cracow, Bologna, and Padua. Copernicus was a professor of mathematics at Rome, 1501, and later he became canon of a cathedral under his bishop uncle, his mother's brother. Taking the hints given by Pythagoras, Copernicus spent several years in studying the apparent motions of the heavenly bodies, and wrote a treatise, first published at Nuremberg in 1543 giving proof that the earth and planets move around the sun as a center. In deference to the Church of Rome, from which he anticipated opposition, Copernicus dedicated his book to the pope and put forth his theory as a mild suggestion with such proofs as had occurred to him. The central statement of the work is this: "The earth is not the center of the universe. It is only a satellite of the sun." It is needless to say that the "Copernican System" was rejected promptly by the authorities of the day. It is said, on what authority we do not know, that Copernicus received the first copy of his book fresh from Nuremberg the day he died. A crater, 56 miles in width, of an extinct volcano in the moon has been named Copernicus in honor of the great astronomer. See KEPLER; GALILEO.

Cophetua, ko-fĕt′u-â, **King,** in old English ballad, an African king. He disdains all womankind, but Cupid appears. "He drew a dart and shot at him." Cophetua then falls in love with a beggar maid, named Penelophon. He weds her and they live a long and happy life together. Shakespeare alludes to Cophetua several times. In *Romeo and Juliet* occurs the line, "When King Cophetua loved the beggar maid." Tennyson in *The Beggar Maid* has given a pretty, modernized version of the story.

Her arms across her breast she laid;
  She was more fair than words can say:
Bare-footed came the beggar-maid
  Before the king Cophetua.

In robe and gown the king stept down,
  To meet and greet her on her way;
"It is no wonder," said the lords,
  "She is more beautiful than day."

As shines the moon in clouded skies,
  She in her poor attire was seen:
One praised her ankles, one her eyes,
  One her dark hair and lovesome mien.

So sweet a face, such angel grace,
  In all that land had never been:
Cophetua sware a royal oath:
  "This beggar maid shall be my queen!"

Copley, John Singleton (1737-1815), an American historical painter. He was born in Boston of Irish parentage and died in London, where he had resided for some years. Although called an American artist, his subjects, his associations, and his sympathies were British. At an early age, he showed talent for drawing. He was self educated. His first reputation in England was made by a picture called *The Boy and the Squirrel,* which he sent anonymously to Benjamin West, who exhibited it at the Society of Arts in 1860. It was praised highly by the best English artists. In 1783 Copley was elected a member of the Royal Academy. Some of Copley's most celebrated portraits are of the English Royal family. *The Death*

of Lord Chatham, now in the London National Gallery, is considered Copley's best work. His *Siege and Relief of Gibraltar* is kept in the council chamber of the Guildhall. Had he returned to his native land and employed his talents on Revolutionary subjects, he would have attained a more prominent place in the history of art. Holmes in *The Autocrat of the Breakfast Table* alludes to Copley portraits:

> The great merchant-uncle, by Copley, full length, sitting in his arm-chair, in a velvet cap and flowered robe, with a globe by him, to show the range of his commercial transactions, and letters with large red seals lying around, one directed conspicuously to The Honorable, etc., etc. Great-grandmother, by the same artist; brown satin, lace very fine, hands superlative, grand old lady, stiffish, but imposing.

The allusion is further explained in a footnote, as follows:

> The full-length pictures by Copley I was thinking of are such as may be seen in the Memorial Hall of Harvard University, but many are to be met with in different parts of New England, sometimes in the possession of the poor descendants of the rich gentlefolks in lace ruffles and glistening satins, grandees and grand dames of the ante-Revolutionary period.

Copper, a hard, reddish metal. Pure copper is one of the chemical elements. Symbol, Cu., atomic weight, 63.6; density, 8.9. Copper is one of the most useful metals. It is rolled or hammered into thin sheets, and may be drawn into slender wire of great strength. A copper rod one square inch in section is capable of sustaining a weight of 80,000 or even 90,000 pounds. Copper does not tarnish in dry air, but in moist air it becomes covered with a coating of green. Copper forms poisonous compounds. Vegetables of all sorts may be boiled safely in a copper kettle, but should on no account be allowed to stand in it. Vinegar should not come into contact with copper. The green rust which forms on the surface of copper kettles and on copper coins is a carbonate of copper. It is formed by the carbonic acid and oxygen of the air, which act upon moist copper. It is very poisonous; hence naked copper vessels would better not be used at all in cooking. Although copper is a poison, the human system seems to require a trace of it. Bread and nearly all ordinary foods contain from two to four parts of copper to the million. The tissue of the human liver contains thirty parts to the million. Copper is found usually in compound with other elements. In union with carbon it forms a beautiful mineral known as malachite; with sulphur and iron, it forms copper pyrites. It occurs also as an oxide, and in combination with sulphur. In these cases it occurs in fissures or veins in rocks. Masses of copper occur in conglomerate rocks and in sandstones. This is the case in the Superior region and to some extent in Montana.

Copper is distributed widely, but is found in paying quantities in few localities. The first American copper was found in Connecticut. Montana, the upper peninsula of Michigan, and the mines of Arizona furnish half the world's copper. The Michigan copper mines appear to have been visited by the American Indians in prehistoric times. Shallow pits were found by the white man from which the aborigines had apparently dug copper. Large blocks of pure copper had been detached and left by them. Copper ornaments, bracelets, rings, and anklets, implements, knives, awls, and axes, made, apparently, from Lake Superior copper, have been found in Indian graves and old dwellings. The most celebrated copper mine in this region is the Calumet and Hecla, which has already reached a depth of over 4,000 feet, and has yielded as high as 63,000,000 pounds of copper in a single year. The Anaconda mine of Butte has reached a depth of 1,000 feet. An entire granite mountain is seamed with copper and silver veins. It is the source of wealth on which the city has been built up. Montana has a reputation for having produced over 340,000,000 pounds of copper in a single year. Utah, California, Oregon, Colorado, and New Mexico have deposits of copper, and even Vermont produced 1,200,000 pounds of copper in 1892. About one-sixth of the world's copper is refined by a single plant in Brooklyn. Of old world mines the most famous are near Seville, where a series of copper veins crosses the

boundary line between Spain and Portugal. Russia, Norway, Sweden, and Austria produce copper. Italian veins were worked by the ancient Etruscans. The ancient supply of Great Britain was drawn chiefly from Cornwall. Copper is also produced in Mexico, Nova Scotia, the province of Quebec, Cape Colony, Chile and Australia. A rather remarkable mine is found in Japan. The world annually produced about 2,000,000,000 pounds of copper before the war. Afterward, in 1916, America alone was said to have exceeded that amount, while later the United States doubled its refining capacity and could produce 2,780,000,000 pounds per year in 1918.

Bronze of apparent Asiatic origin containing a little tin, was in use in Homeric times. Tools of copper in the form of bronze have been found in the lake dwellings of Switzerland. Although both copper and tin are soft, an alloy of these metals is hard. Cannon are made of an alloy of ninety parts of copper and ten of tin. Bronze statues are made usually of copper, tin, and zinc. There are over one hundred grades and kinds of bronze. Brass is also an alloy of copper with zinc, much used for builder's hardware and for ornamental purposes in machinery. Copper was once in great demand for sheathing the keels of vessels, but it has been supplanted largely by iron and by the substitution of copper paint. Copper is still used for plumbing and for roofing. Copper wire is strong and is an excellent conductor of electricity. An immense amount is used in the manufacture of telegraph and telephone wires. Copper oxide is used to color glass a ruby-red tint. The annual consumption of copper for all purposes has increased faster than that of any other metal, and it is now estimated that the United States alone uses 1,000,000,000 pounds per year.

The price of copper has been subject to extreme fluctuations. During the past fifty years it has ranged from nine cents to sixty cents per pound, but of late the few really considerable copper mines have passed into the hands of owners who cooperate under an agreement as to quantity and prices. For some years the price of copper has been from twelve and one-half cents to fifteen cents per pound.

The war industries board fixed the price of copper for the war at 23½ to 26 cents per pound.

The North American production of copper for 1919 as estimated by the United States Geographical Survey:

States	Pounds
Alaska	56,534,992
Arizona	536,515,368
California	23,548,698
Colorado	4,892,538
Idaho	3,966,655
Michigan	201,716,335
Montana	176,289,873
Nevada	64,683,734
New Mexico	60,377,320
Oregon	2,808,017
Tennessee	15,629,454
Utah	146,178,088
Other states	32,399,066
Total	1,310,541,529
Canada	77,775,600
Mexico	158,760,000

In 1917 copper exports aggregated 1,083,575,360 pounds, while in 1918 they ran at more than 2,000,000 pounds per day. At one time Chile was the greatest copper producer of the world but her mines were later neglected until the war demands brought large investments from America and the mines became active again. Great Britain gets most of her copper from the United States.

Copperas. See VITRIOL.

Copperhead, or **Cottonmouth,** a venomous reptile related to the rattlesnake and the moccasin. Its general color is coppery; top of head, coppery-red; belly, yellowish; length, up to forty inches. It is nowhere abundant. It ranges from New England to Wisconsin south and westward to Texas. The copperhead is an inhabitant of marshes and meadows, woods and rocks. It is not found in a prairie country. It lives on mice, frogs, and birds. During the Civil War, Northern men with Southern sympathies were called "copperheads" as a term of extreme opprobrium. See MOCCASIN SNAKE; RATTLESNAKE.

Copra. See COCOANUT.

Copts, native Egyptians. No doubt the Egyptians underwent more or less intermixture during the sway of the Roman Empire; and yet it may be said that the Copts are the descendants of the ruling class of ancient Egypt. The Copts have been overrun by the Arabs so long that their language is almost extinct. They have kept alive many customs however. Not infrequently a conquering people is absorbed by the conquered, as was the case in Greece and Italy and Spain; but the Copts have been losing to the Arabs ever since the Arabian conquest. At the middle of the nineteenth century they formed about one-fourteenth of the population of Egypt.

Many of the Copts are now Mohammedans; many others are Roman Catholics; but the majority are members of what is known as the Coptic church. Speaking strictly, the term is racial, but in ordinary use Copt refers to the church or denomination. The Abyssinians are also adherents of the Coptic church. The head of the Abyssinian church is consecrated by the Coptic patriarch of Alexandria and acknowledges no other authority. The Copts are reputed to have been converted to Christianity by St. Mark. As compared with Protestant denominations, the Coptic church is an ancient one, dating as a schism from the Orthodox Greek Church in 451, before the final rupture between the Greek and the Roman churches. In foundation doctrine the Copts differ little from the Church of Rome. The head is the patriarch of Alexandria, who refuses all allegiance to the sees of Rome and Constantinople. The church has regular orders of bishops, priests, and monks. All but the superior clergy are allowed to marry. These ancient Egyptians have been harassed by the Greeks, the Romans, and the Saracens. Like the Jews they have maintained their manners, features, and religion; but the Coptic language has been replaced by the Arabic, and is retained only in a few religious ceremonies, just as Latin has been retained by the Roman Church. At the time of the Saracenic invasion of Egypt the Copts numbered perhaps two-thirds of a million people, but at the present time they do not exceed one-fourth of that number. Many have become Moslems. The Coptic church shows some signs of disintegration, in which case it is likely to be absorbed by the Roman Church. It has been suggested that the name Copt is derived from the last syllable of Egypt. The Copts of Egypt dress like Moslems, but wear a distinctive black turban. They are said to be gloomy, deceitful, and bigoted. They have black eyes and curly hair and are very expert in calculations. Like the Hebrews they take naturally to merchandising and to clerical work, rather than to agriculture. In the early days of the Coptic sect a considerable literature, consisting chiefly of the lives of saints and of religious homilies was produced.

Copyright, exclusive ownership accorded an author or artist, corresponding to the patent of an inventor. The United States copyright office is in charge of the Librarian of Congress. The exclusive right to use, multiply, or sell a book may be had by sending this office two copies of the work with a recording fee of one dollar. A number of very important changes have been made in the law, first among which is a provision that copyright shall be obtained by publication with the notice of copyright, thus doing away with the preliminary deposit of a title in the copyright office. Registration of copyright is now required as a step subsequent to publication. United States copyright is issued for twenty-eight years, and may be renewed by the author or his heirs for an additional fourteen years. Copyright is designed to protect not only books, but a map, chart, musical composition, print, cut, etching, engraving, photograph, drawing, chromo, statue, statuary, or any art design, including designs for decorative articles such as tiles, or articles of pottery or metal. The registrar of copyrights has authority to reject any work which he may deem to lack originality, or to be an infringement of the copyright of another. Over 90,000 titles are registered every year, with about 5,000 rejections. It is illegal to print a copyrighted article without the author's permission. Like any other theft, it renders the publisher liable to punishment; but if

an author neglects to copyright his work he cannot recover damages.

International copyright arrangements have been entered into between a number of leading countries, whereby a citizen of one country may secure a copyright in all the others. Before the days of international copyright, American publishers were severely criticised, by English authors especially, for *pirating,* as it was called, American editions without making the European author compensation. Foreign governments issue long copyrights. In Great Britain the term is for the author's life and seven years after; but, in any case, the term is to be not less than forty-two years. Colombia and Spain issue copyrights for the author's life and eighty years after; Belgium, Norway, Russia, Ecuador, and Peru, for the author's life and fifty years afterward; Italy, eighty years and the author's life,—in any case, not less than the author's life and forty years; France, Germany, Austria, Switzerland, and Japan, for author's life and thirty years after; Brazil, Sweden. and Roumania, for author's life and ten years after.

The persons entitled by act to copyright protection for their works are:

(1) The author of the work, if he is:

(a) A citizen of the United States, or

(b) A resident alien domiciled in the United States at the time of the first publication of his work, or

(c) A citizen or subject of any country which grants either by treaty, convention, agreement, or law, to citizens of the United States the benefit of copyright on substantially the same basis as to its own citizens. The existence of reciprocal copyright conditions is determined by presidential proclamation.

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h. Reproductions of a work of art;
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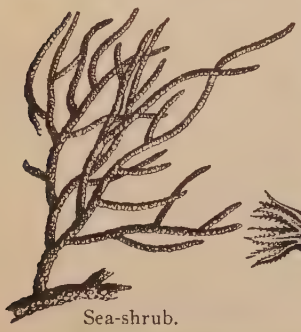
k. Prints and pictorial illustrations.

Coracle, an Irish or Welsh name applied to boats used by the native fishermen. A coracle consists of a wicker or basket-like frame, which in former times was covered by the skin of an animal. This was the kind of boat found in use by Caesar when he invaded Great Britain. It is usually oval in form, and has the advantage of being very light. Although it will carry but one person, it is transported easily from one body of water to another. It is, in this respect, at least, to be compared with the birch bark canoe of the Northwest. The Mandan Dakotas navigated the Missouri in coracles covered with green buffalo hides. See BOAT.

Common red coral.

Same, sectional view.

Sea-pen.



Sea-shrub.

Same, magnified highly.

Red coral, larvae escaping.

7. Vase coral. 8. Eye coral. 9. Creeping sea anemone. 10. Reef coral. 11. Sarcophytum. 12. Branching coral. 13. Sea anemone. 14. Ammothea.

Coral, a limy secretion of marine animals called polyps. These polyps are related to the sea anemone, the jelly fish, and to the fresh water hydra. There are numerous coral-producing species. Though called a skeleton, coral is produced on the outside of the animal for a shelter, or home in which to live. A piece of coral is usually the product of a large colony of polyps that bud or branch like trees. The coral of some species takes the form of a fan; of others that of a branching shrub or flower; or a mushroom; or a brain-like mass; or a bunch of moss. One might conclude readily that coral is a sort of limy moss or other vegetable growth; but in reality it is an animal production corresponding very closely to the shell of a snail. A coral mass consists of tubes in which the polyps find shelter. As the polyp extends, the tube in which it lives grows longer. The coral-producing polyps—they are not insects—appear to live on sea water. They require a temperature that never falls below 68°, a hard bottom to which to attach themselves, and sea water entirely free from mud or grit.

No coral is found on the western coast of the two Americas. On their eastern coast it is confined to tropical waters extending from Florida to Brazil. Red corals, much prized for necklaces and other articles of ornament, are found in the waters of the Mediterranean. Beautiful coral comes from Japan. Coral is found sometimes in masses of extraordinary size. In the southern Pacific and Indian oceans it not infrequently forms reefs from a few yards to many miles in length. The great Barrier Reef, thirty miles off the northeastern coast of Australia, is of coral formation. It extends 1,300 miles along the coast, with a total area of nearly 100,000 square miles. The water between the reef and mainland is seldom less than 36 feet deep. The outer wall of the reef is usually vertical. It has not been surveyed with accuracy, but in places it has been found to extend nearly perpendicularly 1,700 feet below the surface of the water.

The circular islands of the Pacific known as atolls are also of this nature; the reef taking the form of the circumference of a circle, inclosing a round lagoon within. It was supposed formerly that the lagoon marks the apex of an island which has gradually subsided, leaving a fringe of coral which the polyps have built up and up as the bottom sank, but this theory of subsidence is now in question. The reef corals are built on the plan of six or some multiple of six; that is to say, the tubes are six or twelve sided. The other group of fan corals is built on the plan of eight.

See NAPLES.

Corday, Charlotte (1768-1793), a French heroine. She was of noble birth and was educated in a convent in Caen. She read Voltaire and other progressive French writers, from whom she imbibed the principles of the French Revolution. The bloody scenes enacted by the Parisian leaders filled her with horror. She decided to sacrifice her life in an attempt to strike at the center of the band of men who directed the Reign of Terror. She repaired to Paris, and on July 13, 1793, she gained access to the apartments of Marat, and under pretense of presenting a petition for signature, stabbed that monster to death as he sat in a bath tub seeking relief from an affliction. Two days later she was tried by the tribunal, and was sent to the guillotine. Her act reminds the reader of similar self-sacrifices made by Russian women who have carried out the plans of Nihilist leaders. See MARAT.

Cordelia, the youngest daughter of King Lear in Shakespeare's tragedy of that name. Cordelia is introduced in the first scene. She does not appear again until the last part of Act IV. She speaks altogether but 115 lines. Nevertheless, throughout the entire play we are continually conscious of Cordelia. This is due, not alone to the fact that the entire action is a result of her conduct, but as well, to her character which Shakespeare's genius has "painted with few strokes yet vividly and perfectly."

> The beautiful soul of Cordelia, that is little talked of by herself, and is but stingily set forth by circumstance, engrosses our feeling in scenes from whose threshold her filial piety is banished. We know what Lear is so pathetically remembering; the sisters tell us in their cruellest moments; it mingles with the midnight storm a sigh of the daughterhood that was repulsed. In the pining

of the Fool we detect it. Through every wail or gust of this awful symphony of madness, ingratitude, and irony, we feel a woman's breath.—Weiss.

Cordilleras, a range of mountains. The word is Spanish, meaning originally a cord or rope. It is a general word like plateau, and is used by the Spanish to designate a chain of mountains. As a proper name, the term was first applied by the Spaniards to the ranges of the Andes, and was extended to the ranges of Mexico and farther northward. American geographers are now pretty well agreed to confine the term to the vast mountain system embraced by the Rocky Mountains and the Sierra Nevada. The Cordilleras, taken in this sense, are a thousand miles in width in the latitude of Colorado, and extend from Central America to Alaska. The Coast Range and the Cascades are included.

Cordova, the capital of the province of Cordova, Spain. It is situated on the Guadalquivir about fifty miles above Seville. It is noted for the manufacture of leather goods and silverware. The city has an interesting history. It is the old Colonia Patricia of the Romans, a place of wealth and luxury. Seneca and Lucan were born here. The city is still surrounded by a mighty wall and massive towers. Part of the wall is Roman. In 572 Cordova was taken by the Goths. From 756 to 1051 it was the capital of Arabian Spain. Under the Moors the city walls were fifteen miles in extent, and the population is thought to have reached 1,000,000. The city was famous for Cordova leather. The Moors erected their chief mosque here. It is a magnificent structure. In plan it is nearly square. Eighteen rows of columns carry arcades, above which a second tier of arches carries the vaulting of the ceiling. In richness of decoration, mosaic, and sculpture, the work is said to surpass the Alhambra. The interior ranks the mosque, now a cathedral, among the vast structures of the world. A nearby cloister is known as the Court of Oranges. During the period of the Moorish occupancy Cordova was a center of Arabian learning, the most celebrated center of the arts and sciences in Europe. Algebra, alchemy, and other subjects spread into western Europe through Cordova. In 1236 the city was captured by Ferdinand III of Castile, but under Christian ownership it declined rapidly in splendor, learning, and prosperity. The present population is about 58,000. Areas once adorned with fountains and expensive buildings are now used for kitchen gardens.

Corduroy, a thick, corded, cotton fabric. It is used for the outer garments of laborers and those engaging in out-of-door sports. To a less extent, it is used for covering furniture and for fancy work. Corduroy is a pile fabric belonging to the same class as velveteen. The pile is produced by an extra system of weft threads, which "float" over the ground cloth. These wefts are firmly bound in at intervals. The loops are left on the surface in groups to form the cords. Between these groups, the pile weft disappears into the ground web of the fabric. The loops in the center of a group are longer than those on the sides. After weaving, these loops are slit by the cutter, brushed up and closely sheared. Corduroy was made first in France in the seventeenth century. It was designed for the wear of the king's huntsmen, the name, corduroy, meaning "king's cord." Corduroy has given its name to a kind of road constructed through swampy places by means of small logs laid close together crosswise, forming a solid but uneven roadbed.

Corea. See KOREA.

Corelli, kŏ-rĕl'lee, **Marie** (1864-), an English novelist. She was born in Italy and became the adopted daughter of Charles Mackay, the poet. The name Corelli was used in the first instance as a pen name, but has become her legal name. Her best known works are *A Romance of Two Worlds, Barabbas, The Sorrows of Satan, Thelma, Vendetta, The Mighty Atom.* Miss Corelli's stories have enjoyed a wide popularity, but it is doubtful whether they possess qualities which will give them permanent place in literature. Some of them have a distinctly religious tone, having been written apparently with the express purpose of combating atheistic views. The best display some power in character drawing, great ease and freedom of expression, and are intense in feeling and sentiment.

When the author strives for the dramatic, however, she usually reaches only the sensational.

Coriander, a plant of the parsley family closely related to caraway, but growing taller. It is a native of the Mediterranean region. The seeds contain a strong oil of characteristic taste, and are used to flavor soups, cake, cookies, and confectionery. See CARAWAY.

Corinna, kō-rĭn′a, a Greek lyric poetess of the first half of the fifth century B. C. She was born at Tanagara, Boeotia, She is said to have instructed Pindar and to have won the victory over him five times in the public poetic contests. According to Pausanius, she was so beautiful that the judges may have been influenced in her favor. Only a few fragments of her poems are extant.

Corinth, a city of ancient Greece. It was situated on a narrow isthmus of the name—a portage where the wares of Italy and the West were exchanged for those of Greece, Asia Minor, and the East. The neck of land is four miles wide. A strongly fortified citadel added to the importance of the city. It was at one time at the head of the Achaean league. The Corinthian style of architecture was developed here. In its day the city was enormously wealthy, and was the most shamelessly profligate city in Greece. Paul's Epistles to the Corinthians were addressed to the Christian church here. A few pillars and ruins deeply buried in sand are all that remain of the celebrated city. The old marketplace has been excavated. It lies sixty feet below the present level. A neglected village of a few thousand inhabitants occupies a part of the former site. A sea level ship canal has been constructed across the isthmus on which Corinth formerly stood. This canal was completed in 1893, at a cost of $11,000,000. In one place the canal passes through solid rock. Massive walls rise on either side to a height of 260 feet. The passage is lighted at night by electricity. Iron rings are provided at intervals to which ships may tie for safety—against the winds that at times blow through the cut with the violence of a hurricane.

Cork, the third city of Ireland. It is situated in the southern part of the island, about fifteen miles above the mouth of the river Lee. It is at the head of navigation and has extensive wharves, but Queenstown at the mouth of the harbor is the port of call for ocean-going steamers. The city exports butter, eggs, bacon, grain, and live stock. Irish friezes and whiskey are made here. The population of the city and suburbs is not far from 100,000. Dublin is largely English. Belfast is practically Scotch, but Cork, the seat of the County Cork, is considered a genuinely Irish city. See IRELAND.

Cork, the spongy outer bark of an evergreen oak. The cork oak grows along the coast of southern Europe and North Africa, but chiefly in Algeria, Spain, and Portugal, to which countries the cork industry is worth several million dollars a year. It is a low, spreading tree with chestnut-like acorns. When the trees are about ten or fifteen years old, the first stripping is made. It is coarse and uneven, and is used chiefly for fishing net floats and similar purposes. The second stripping is better. The quality improves with the age of the tree. Cork harvest comes in July and August. Only the outer bark is removed. Cuts are made around the tree and up and down, dividing the bark into suitable sections. The greatest care is taken not to injure the inner bark by cutting too deeply. The sections are then removed by inserting the flattened handle of the cutter's knife carefully. After scraping the outer surface the sheets are heated and slightly charred to close the pores. They are then flattened in a press and baled for market.

Owing to its toughness, lightness, and elasticity, and the fact that no liquid can pass through it, cork is in demand for bungs of casks, bottle stoppers, bicycle handles, shoe insoles, artificial legs, linings for insect cases, etc. Cork weighs a trifle less than a fourth as much as water. "As light as cork," is a proverbial expression. It is, therefore, an ideal substance for life preservers, buoys, and jackets. The inner bark of the cork tree, like all oak barks, is valuable for tanning. Cork has

a peculiar way of dulling a knife edge. Workmen who cut corks by hand whet for each cork. This difficulty is greatly in the way of contriving successful cork-cutting machines; yet but little of the work is now done by hand. Cork chippings and parings ground up with boiled linseed oil make a material which is applied to a coarse canvas in the manufacture of linoleum. Scrap cork is pressed also in damp-proof and insulating boards.

Consul-General Frank D. Hill, of Barcelona, states that exports of cork from Spain during the years 1905, 1906, and 1907 were $6,835,624, $7,626,494, and $8,805,614 respectively. The total importation of cork and manufactures of cork into the United States amounts to about $4,000,000 annually, one-half of which is the bark free of duty; the other half consists chiefly of corks, which pay 15 cents per pound duty. American statistics show yearly imports of about $500,000 worth of cork bark from Spain and over $1,000,000 worth from Portugal, while about $1,500,000 worth of manufactured cork comes from Spain.

See LIFEPRESERVERS; BOTTLE.

Cormorant, a family of fish-pursuing birds. Of thirty species ten are found in North America. They breed and fish in colonies, chiefly on the seacoast, but are found on large bodies of inland waters as well. They dive from the surface or from a low perch. The double crested cormorant, about thirty-three inches in length, chiefly black, nests in trees about the lakes of the upper Mississippi Valley. A colony nesting on an island in a lake, for instance, seems to map out the fishing waters. The females feed near the island; the males fly often several miles away each to his preserve. The cormorant pursues fish under water with inconceivable rapidity. The loon uses feet only, but the cormorant uses feet and wings. The feet fold when carried forward, and open during the stroke. The Chinese boat-dwellers train tame cormorants to catch fish. The cormorant sits on the side of the house-boat gravely watching for fish, which it is claimed he pursues to a depth of 100 feet, if necessary. A ring on the neck prevents the bird from swallowing the fish until fed by its master. The English nobility at an early date took fish in the same way. When at leisure a cormorant takes pleasure in playing with a live fish like a cat with a mouse. The fish is tossed into the air and caught again in the wide bill. See PELICAN; ANHINGA; ALBATROSS.

Corn, a term of varied application. Scriptural corn is barley or wheat. Wheat and other small grains are known as corn in England, and in Scotland it was at one time customary to apply the term to oats. American corn is Indian corn or maize—the Mondamin of *Hiawatha.* Quite recently a wild plant resembling maize has been discovered in the mountains of Mexico. The Indians call it coyote corn, because the coyotes feed greedily on the young ears. Botanists consider it the wild ancestor of our cultivated corn.

Botanically, corn is a grass, from three to sixteen feet in height. Corn has two kinds of flowers, the tassel which produces pollen, and the young ear, the long pistils of which are known as silk. Every grain of corn has its thread of silk. The common axis on which the grains grow is known as a cob. The cob surrounded by grains is known as an ear. The ear is inclosed by long strip-shaped leaves known collectively as husks. The number of rows of grain on the cob is always an even number.

Corn is native to Central America. Specimens were carried to Europe by Columbus. It was cultivated by the aborigines of Central and North America, chiefly, of course, by the labor of the squaws. It will be remembered that the Pilgrims and the early settlers of Virginia obtained supplies of corn from the natives. Its cultivation has extended wherever climatic conditions permit. Argentina and Uruguay in South America raise corn. Egypt, Italy, Southern Russia, Austria-Hungary, and the countries of the southern Danube, also produce considerable quantities. The flour merchants of Central Europe are supplied with cornmeal from the mills, chiefly, of Hungary. The great corn region of the world, however, lies in North

America, east of the one-hundredth meridian, and between the thirtieth and the forty-fifth degrees of latitude. The area of greatest production, the corn belt proper, is a strip of irregular width, passing from central Ohio westward between Chicago and St. Louis as far as the center of the boundary line which separates Kansas and Nebraska. Four-fifths of the world's corn crop is produced in the United States.

The range of corn is determined less by soil than by other conditions. Corn requires a warm summer, but cannot endure extreme heat or prolonged drouth. Its northern limit is determined by the length of the growing season, as corn is easily frosted. Efforts to produce varieties that mature early have been made, with encouraging results. The limit of profitable corn culture is 100 miles farther north than was deemed possible at the close of the Civil War. Other experiments carried on with intelligence through a number of years have resulted in improving the size of the kernel and general productiveness of corn. A good ear of corn may be described as tapering slowly, with a length of nine inches and a circumference of seven. It has long, wedge-shaped kernels, in from sixteen to twenty rows, with the tip well filled out, and a small cob easily broken out of the husk. One hundred pounds of such corn in the ear yield about ninety pounds of shelled corn. Successful farmers in the corn belt expect a yield of from 50 to 75 bushels of shelled corn to the acre, although the yield has been pushed considerably beyond the 100 bushel limit. The average yield in the corn belt, year in and year out, is 34 bushels. When planted 3 1-2 feet apart each way an acre contains 3,055 hills of corn.

The world's crop varies greatly from year to year according to rainfall, freedom from the attacks of insects, and lateness of the first autumnal frost. In 1899 the world produced 2,611,000,000 bushels; a year later, the combined yield of all corn-producing countries fell to a trifle over 2,000,000,000 bushels. In 1905 the United States alone produced 2,707,993,540 bushels. A recent writer has stated that if the corn crop of the United States were loaded on two-horse wagons, two tons to the load, and the wagons were to take the road, the nose of one team at the tail board of the wagon just ahead, the string of wagons would reach around the world six times.

Methods of cultivation vary greatly. The settler in a timbered country digs holes with a hoe among the stumps of his first clearing, and drops three or four kernels into each, thus raising a few bushels of corn of great service to himself and family. In the corn belt, where fields are broad, level, and free from obstructions, the work is done almost entirely by machinery. The land is turned over with gang plows, drawn by from three to five horses. The seed is dropped by a cornplanter which deposits a few kernels at regular intervals. The earth is stirred about the young plants and growing weeds are killed by the horse cultivator, or a series of small hoes swung from an axle and guided by the feet of the driver, who rides all day. The crop is cut with a corn harvester, that binds the stalks into sheaves and throws them off at one side. Husking by hand has been superseded in part by a cornshredder, a sort of threshing machine which shreds the stalks and shells and winnows the corn, delivering it into sacks at one side, like a threshing machine for small grain. The average amount of human labor required to produce a bushel of corn has been estimated at thirty-four minutes.

Considerable corn is consumed in the manufacture of cornmeal and cornstarch. As a food, corn ranks next to rice in the number of people it supports. Eleven million bushels of American corn are taken annually by the distilleries. Some corn is exported, but the bulk of it is used at home in feeding hogs, beef cattle, and work animals. In the absence of wild hay, many sections of the country depend almost entirely on corn fodder for rough feed. Intelligent feeders expect ten pounds of sound corn, fed under proper conditions to thrifty animals, to produce one pound of beef, five pounds of mutton, or four and one-half pounds of pork. Corn is, therefore, very important to the farmer.

Much attention is paid to breeding corn. Raisers of seed are as eager for superior ears as dairymen are for a superior cow. At the Ames, Iowa, corn show of 1908 the champion ear sold for $28; the best ten ears brought $85; thirty ears sold for $65 and the prize bushel was bid in at $76. Secretary James Wilson of the United States Department of Agriculture, writing of the corn crop of 1908, says:

Greatest of all crops is Indian corn, the priceless gift of the Indian, who freely gave to the white man information which led to the production of 2,643,000,000 bushels this year. The value of this crop almost surpasses belief. It is $1,615,000,000. This wealth that has grown out of the soil in four months of rain and sunshine, and some drouth, too, is enough to cancel the interest-bearing debt of the United States and to pay for the Panama Canal and fifty battleships.

The following statement shows the estimated corn crop of 1919 by states and territories which may be considered fairly representative:

State	Bushels
Maine	1,100,000
New Hampshire	1,050,000
Vermont	2,120,000
Massachusetts	2,640,000
Rhode Island	495,000
Connecticut	3,300,000
New York	35,260,000
New Jersey	10,800,000
Pennsylvania	72,192,000
Delaware	6,900,000
Maryland	28,413,000
Virginia	44,800,000
W. Virginia	24,990,000
N. Carolina	55,100,000
S. Carolina	37,440,000
Georgia	69,890,000
Florida	12,600,000
Ohio	162,800,000
Indiana	175,750,000
Illinois	301,000,000
Michigan	64,350,000
Wisconsin	85,540,000
Minnesota	118,000,000
Iowa	416,000,000
Missouri	155,412,000
N. Dakota	16,764,000
S. Dakota	91,200,000
Nebraska	184,186,000
Kansas	69,362,000
Kentucky	82,500,000
Tennessee	74,750,000
Alabama	62,843,000
Mississippi	59,700,000
Louisiana	32,375,000
Texas	202,800,000
Oklahoma	74,400,000
Arkansas	48,726,000
Montana	1,728,000
Wyoming	768,000
Colorado	11,206,000
New Mexico	7,200,000
Arizona	1,287,000
Utah	432,000
Nevada	90,000
Idaho	840,000
Washington	1,620,000
Oregon	1,860,000
California	2,871,000
U. S.	2,917,450,000

CORN CROP OF COUNTRIES NAMED.

Country.	1919 Bushels
United States	2,917,450,000
Canada	12,691,000
Guatemala	4,939,000
Argentina	.....
Chile	1,702,000
Uruguay	.....
France	.....
Italy	79,000,000
Spain	24,553,000
Switzerland	287,000
British India	.....
Japan	.....
Philippine Islands	.....
Algeria	236,000
Morocco	.....
Tunis	217,000
Union of S. Africa	41,289,000
Australia	.....
New Zealand	415,000
Comparable total, 8 countries	3,074,856,000

During the War the corn crop in Europe was greatly reduced, and the price of corn in the United States reached the highest point in its history.

Corn Laws, statutes designed to promote or regulate the supply of breadstuffs. Corn is to be understood in the Old World sense of grain, chiefly wheat. That food might be plenty the Athenians forbade the outward shipment of corn (wheat), and required Athenian ships loaded abroad to carry wheat to the home country only. Rome enacted corn laws, even to the extent of giving grain to the needy.

Corn laws form an important chapter in the history of England. From the time of the Norman Conquest exportation of corn was forbidden strictly. In 1436 it was decided to permit the exportation, so long as corn, *i. e.,* wheat and barley, was

cheap at home. In 1571 the government decided to revise the laws again. By this time three contending interests were apparent—working people wanted a cheap loaf; landowners wanted a high rental for wheat fields; and Parliament, in which land owners, but not working people, were well represented, required a revenue for the government. It was decided to allow the exportation of corn so long as it was cheap, and on condition that the shipper pay a tax of so much per bushel into the government treasury. This was a victory for the government.

A hundred years later and after some tinkering, importation was prohibited, practically so, at least, by a high tariff, except as the price in England might rise above a certain high price. This was a victory for the land owner. In 1688, the year of the English Revolution, and subsequent years, land-owning interests again prevailed and the government undertook to pay a bounty on every pound of wheat, rye, oats, or barley shipped to foreign countries. After the Napoleonic wars, however, the land-owning class was affected by the fall of prices consequent upon the close of the war. Parliament in the interest of this class, passed the Corn-Laws forbidding the importation of foreign breadstuffs until the price of the domestic grain reached a certain price. A little later, because of the protests of the consumers, a sliding scale was introduced whereby it was provided that when the price of domestic grain rose above a certain point, foreign grain could be imported, but as soon as it fell below that price, importation must cease. These laws worked great hardship to the factory class, a vivid account of which may be found in Kingsley's *Alton Locke*. They continued in force, however, in spite of the opposition of Cobden and Bright until popular uprisings and the total failure of the potato crop in 1845 convinced Parliament that it would be wise to permit the buying and selling of foodstuffs without restriction. This new order went into effect in 1849; since which time the foodstuffs of America have been sold in Great Britain free from all but nominal taxation, and for many years the mere cost of inspection. It is interesting to note that there is talk of a revival of British import duties on breadstuffs.

See COBDEN; BRIGHT; IRISH FAMINE.

Corneille, kor-nē′yah, **Pierre** (1606-1684), a noted French dramatist and poet. He was a native of Rouen. He was educated at the Jesuit College in that city, and was admitted to the bar in 1624. He held the posts of advocate to the admiralty and to "waters and forests," for which he received, however, little remuneration. His profession seems to have brought him no other employment. His first dramatic production was *Mélite,* a comedy produced in 1629. *Mélite* was very different from the plays then in vogue, but it nevertheless scored a success and became popular. It was followed by others which, though now regarded unreadable, were at that time better than anything known. Richelieu appointed Corneille as one of his "five poets," which meant that it became his duty to write tragedies whose plots were furnished by Richelieu. Corneille was of too independent a character for this work and soon incurred displeasure by making changes in the plots assigned him.

In 1636 appeared *Le Cid,* a tragi-comedy. This has been called the most "epoch-making" play in all literature. It was based on the old Spanish romances. Its immense success aroused the jealousy of Richelieu and the French Academy, and a famous controversy resulted. For years the history of the French stage was the history of Corneille's works. He is the father of French tragedy. *Les Horaces,* following *Le Cid* in 1639, shows greater power of invention than any other of Corneille's plays. *Cinna* was produced in the same year and was considered by Voltaire his masterpiece. Others regard *Polyeucte,* produced in 1640, not only as Corneille's best, but as the masterpiece "of Christian tragedy and the French theatre." Other works followed rapidly, *Le Menteur,* the greatest of Corneille's comedies, being especially worthy of note. And now began a decline as "rapid as his success had been brilliant." It is difficult to account for his loss of popularity. He doubtless feared criticism too much to allow himself

to be guided by his own genius. He had aroused envy and jealousy, and seems to have been angered at having to fight his way. From 1653 to 1659 Corneille devoted himself to poetry and produced no dramatic work. Persuaded to change his resolve, he began dramatic work again in 1659; but, although he produced several plays, they did not attain the celebrity of his earlier dramas. During the last ten years of his life Corneille wrote little. He suffered nearly all his life from poverty—at that time a playwright was but poorly paid—and toward the last he was well nigh destitute. Boileau, who had ever befriended Corneille, persuaded the king to send him assistance, but he died two days afterward.

There is a striking inequality in Corneille's writings. While he has produced work that places him in the front rank of French dramatists, he has written much which is dull and tedious, showing no sign of genius. Molière said, "My friend Corneille has a familiar who inspires him with the finest verses in the world. But sometimes the familiar leaves him to shift for himself, and then he fares badly. Corneille enjoyed, however, immense popularity for a time, and always large appreciation. Boileau, when asked concerning the great men of Louis XIV's reign, replied, "I only know three, Corneille, Molière, and myself." "And how about Racine?" he was asked. "Racine was an extremely clever fellow," he replied, "whom I taught with great difficulty to write verse."

Corneille was not personally prepossessing. Either from shyness, or pride, or both, he preserved a certain rusticity of manners and speech which tended to repel strangers. Racine is said to have remarked to his son that Corneille wrote verses a hundred times more beautiful than his own, but that he was the more popular of the two because he took some trouble to make himself personally agreeable. Sometimes Corneille's friends would take him to task for not cultivating the graces of society, when he would reply, "Je suis toujours, Pierre Corneille,"—I am always Pierre Corneille.

Following are quotations and criticisms:

QUOTATIONS.

A liar is always lavish of oaths.

He who talks much says many foolish things.

He who does not fear death cares naught for threats.

He who is hated by all cannot expect to live long.

He who allows himself to be insulted deserves to be so.

Clemency is the surest proof of a true monarch.

Corneille was the first dramatist who made the sentiment of admiration the basis of tragedy instead of terror or pity.

Almost the first thing which strikes the reader is the singular inequality of this poet. Producing, as he certainly has produced, work which classes him with the greatest names in literature, he has also signed an extraordinary quantity of verse which has not merely the defects of genius, irregularity, extravagance, but the faults which we are apt to regard as exclusively belonging to those who lack genius, to wit, the dullness and tediousness of mediocrity. . . . But his rank among the greatest of dramatic poets is not a matter of question. For a poet is to be judged by his best things, and the best things of Corneille are second to none.—*Britannica.*

Corneille's chief merit lies in his dignity of style, and in a certain declamatory grandeur of sentiment, which his countrymen have been accustomed to consider truly epical, and which it is now impossible to convince them as nearly resembles rant as it does sublimity.—*Chambers.*

Cornel. See Dogwood.

Cornelia. See GRACCHI.

Cornell, Ezra (1807-1874), the founder of Cornell University. He was a mechanic of Ithaca, New York. In the early days of the telegraph, they laid the wires in a plow furrow. Cornell was the first to suggest stringing them on telegraph poles. He made a fortune by constructing and operating telegraph lines. He gave half a million dollars to erect the first buildings of the institution which bears his name, and enriched it with subsequent gifts and services. The autobiography of Andrew D. White, the first president of Cornell, gives an excellent account of the philanthropist's methods and motives.

Cornell University, a celebrated institution of higher learning at Ithaca, New York. It was founded in 1865. The United States gave nearly a million acres of wild lands "for the benefit of agricul-

ture and the mechanic arts." Ezra Cornell gave half a million dollars to found an institution where "any person can find instruction on any subject." The state has made appropriations for maintenance. Three of the regents are appointed by the governor. Liberal citizens have given lands, buildings, collections of books, an immense organ, etc. The total property is valued at about $11,000,000, with an annual income from all sources little short of a million. The grounds are much admired. The doors are open to both sexes. Instruction is free to six hundred students of the state accredited from the various assembly districts. Others are charged tuition. Andrew D. White was the first president. Affairs have been managed with a sagacious liberality from the start. The various departments, especially those of a scientific or engineering character, rank high. There are about 3,000 students in attendance. Summer sessions are a strong feature. The institution is noteworthy as occupying an intermediate position between the endowed tuition college of New England and the free state university of the West. See WHITE, ANDREW D.

Cornet, a wind instrument of brass or silver, somewhat resembling the bugle. The word cornet is French, a diminutive of the Latin word *cornu,* meaning a horn. The instrument consists of a curved tube, fitted with a bell-shaped mouth-piece, and provided with valves or pistons by which the pitch of the tone may be varied. It is used in brass bands to furnish soprano and contralto parts, and is a special favorite as a solo instrument in open air concerts, but its music is considered too harsh and penetrating for regular orchestras.

Cornwall, the most southwesterly district of England. The county is a narrow point of land with a total area of 1,357 miles. The southwest extremity is known as "Land's End." Cornwall shares with other parts of England a reputation for cattle and sheep raising, and for market gardening. It is noted for ancient mines of copper and tin, some of which have been worked to a depth of 2,000 feet, extending far out beneath the sea. The miners at work in their galleries can hear the surf beating above their heads. Pumps are required to keep the mines from becoming flooded. These mines have been worked from time immemorial. They are diminishing in importance. The inhabitants, called Cornishmen, are descendants of the ancient Celts. They are akin to the Welsh, and to the inhabitants of Brittany. Until of late the Cornish dialect was the language of the people; but, through the influence of public schools, it has been replaced by English. Many have migrated to the mining districts of the United States. See CELT.

Cornwallis, Charles (1738-1805), a British general. His father was an English nobleman, to whose estates he succeeded in 1762, with the title of earl. Cornwallis deserves to be held in greater respect than is accorded him by the average American. He was well educated, and served his country honorably. In Parliament he was a friend of America, and opposed the policy that led to war. So outspoken was he that when it became necessary to send his regiment to America, the king offered to give him leave of absence; that is, to excuse him from service; but Cornwallis preferred to lead his own soldiers. He served under Howe and Clinton in the vicinity of New York. All must admit that his campaigns in the Carolinas against Gates and Green were vigorous. His taking a position at Yorktown, and subsequent surrender, were due far more to conflicting orders from Clinton and lack of support than to any want of vigor or skill on his own part. After the close of the American war, Cornwallis served his king in India and sat in the privy council. He was buried in St. Paul's Cathedral, where his memorial tablet may be seen in company with those of Admirals Rodney, Howe, and Nelson, and Generals Abercrombie, Sir John Moore, and others who are deemed to have served their country well. See YORKTOWN.

Coronach, kŏr′ō-năk, a dirge, a lamentation, customary among the ancient Scotch and the Irish. It was sung usually by professionals, who recited the virtues and exploits of the dead. Scott's *Lady of the Lake* gives a fine specimen of the coronach

chanted to the sad music of the bagpipe over the remains of Duncan.

Coronado, kō-rō-näh′dō, **Francisco Vasquez de** (1510?-1542?), a Spanish explorer of New Mexico and provincial governor of Mexico. Great stories were afloat in his time of the "Seven Cities of Cibola" and their fabulous wealth, and in 1540 Coronado set out from Culiacan to search for them with a company of 1,100 soldiers and Indians. He found the seven pueblos of Cibola, but only as poor Indian villages; so he started eastward and explored what is now New Mexico, probably traversed parts of Texas, Colorado, Oklahoma, and on as far as northeastern Kansas, when he gave up his vain hunt for gold and returned to Mexico, many of his followers having perished in the desert. His papers mention the agricultural possibilities of that country, and tell of herds of "humped cattle," the first accurate description of the American buffalo or bison.

Coroner, a county officer whose business it is to inquire into the cause of a sudden or suspicious or accidental death. He has power to empanel a jury and examine witnesses. A coroner's verdict to the effect that the deceased came to an end by foul play, or through the carelessness of another, lays the basis for criminal action by indictment, or for a damage suit to be brought by the relatives. The coroner is usually elected by ballot, the same as other county officials.

Corot, ko-rō′, **Jean Baptiste Camille,** (Paris 1796-1875), a French landscape painter. He has high rank as a painter of landscapes, for which he made extraordinary preparation by a diligent study of nature. His paintings are marked for their sobriety of coloring. It is said that he was the first artist to reveal the possibility of brown and gray. With these colors, aided by pale green, he painted a large number of scenes with exquisite dawn and twilight effects, including, *Morning, Evening, Sunset, Rest, Solitude, Landscape with Figures, Pleasures of Evening,* etc. The Boston Art Museum, the New York Metropolitan Museum, and other American galleries possess specimens of Corot's work.

Corporation, an association or company authorized by law to act as though it were one person. A corporation possesses several advantages over a partnership, and is now the usual arrangement by which banks, railroads, manufactures, and commercial enterprises are managed. A corporation must have a name and must operate under so-called articles, setting forth the kind of business proposed, the manner in which it is to be conducted, and the amount of money, that is to say, capital stock, to be invested. The capital stock is sold to members who thus become shareholders. The management of a corporation is intrusted usually to a board of directors elected annually by ballot, each shareholder being entitled to as many votes as he holds shares of stock. The directors are empowered usually to appoint a president, vice-president, a secretary, and a treasurer from their own number; to fix salaries; and to employ, if necessary, a manager for the business.

Beyond taking part in the annual election of directors the stockholders cannot control the management of the business. This is one of the great advantages of a corporation. In a partnership, a partner who becomes dissatisfied can call for a division and interrupt seriously an enterprise in hand; but a dissatisfied shareholder cannot interfere with the management of a corporation. He may sell his stock, or labor for a change of management; but cannot step in and interfere with what the manager is doing. It would be very awkward, for instance, if seventy-five people owning a railroad in partnership were to become dissatisfied and demand a division of the property, one taking a locomotive, another half a dozen freight cars, a third, two passenger coaches, and others again different sections of the railway, depots, stations, etc.

Another advantage of the corporation is that it permits many people to invest their money in the same business, and yet keeps the management in the hands of a few. It is pretty difficult for half a dozen partners to agree as to the details of a business; yet several thousand shareholders in a corporation find no difficulty in managing a busi-

ness efficiently through a simple method of electing officials from whose decision there is no appeal. The large amount of capital required to carry on such an enterprise as a transcontinental railway, for instance, is beyond the means of a single individual; and even if brought together it could not be held together by any form of partnership. Incorporation seems to be the only practical method of carrying out a large enterprise.

In the eye of the law a corporation is a single individual. It can sue and be sued. It can sell, buy, and hold property. Stockholders may die, but the corporation lives. Stockholders may change, but the corporation is the same. It possesses a certain individuality or personality of its own, independent of its shareholders. A shareholder cannot be sued for the debts of the corporation, nor be held liable for its acts. A corporation may steal timber; its officials may, indeed, be punished, as officials; but the shareholders are not personally answerable to the law. The property of the corporation may be taken to pay for trespass or other damage, but the shareholder's private property may not. One's share in a corporation may be seized and sold for debt, just as his horse or farm may be taken; but a corporation cannot be made to pay the debts of a shareholder. The shareholder and the corporation are two entirely distinct individuals. Profits may be divided among shareholders according to the number of shares held by each. Such payments are called dividends. By general agreement a loss may be made up by an assessment; but ordinarily a corporation has no authority to call upon stockholders to make losses good, any more than a man has a right to call on his neighbors to make up his losses.

The exemption of stockholders from responsibility for corporation debts is subject to two exceptions. In case the original stockholder has purchased his stock for less than par value, he may be required, in case of need, to pay into the treasury the rest of the sum represented by his stock. This is a principle of common law designed to protect creditors who had reason to suppose the corporation had received the face value for stock sold. Some states make stockholders liable for debts twice or three times the amount of stock held.

There are disadvantages connected with corporations. It is hard to right a wrong done by a company of this sort. The stockholders, who may have instigated unlawful acts, hide behind a board of directors, and it is difficult to hold them responsible. Large shareholders not infrequently elect themselves to official positions in which they draw large salaries or otherwise manipulate the business in such a way that the interests of the smaller shareholders are neglected. Dividends may be deferred until the small holders are forced to sell their shares at a ruinous price.

The laws of New Jersey are particularly favorable to the incorporation of the large companies known as trusts. The fees of the state from that source are very large, amounting to $3,500,000 for the year 1904. In 1909 Congress imposed an income tax on corporations designed to produce a revenue and to give the general government an opportunity to know more of the business done by corporations. See TRUST.

Corpulence, portliness, bulkiness of body. Stoutness may be regarded either as a disease or as excessively good health. It is usually accompanied, if not caused, by a good appetite, an excellent digestion, tranquillity of mind, and indisposition to physical exertion. It is not, however, indicative of a sluggish mind. Dr. Samuel Johnson may be mentioned as a corpulent man with a vigorous mind. Stoutness is an enlargement of the soft organs of the body, and an overloading with fat. The muscles and bones do not increase in weight. The cure for ordinary corpulence is exercise, or labor to the point of perspiration, and the avoidance of fat-building foods, such as sweets, fats, wines, potatoes, and rice. Lean meat, game, eggs, fish, green vegetables, especially cabbage and asparagus, and brown bread are recommended. Vinegar is an antifat food article. Many mineral waters have the effect of reducing weight. Bismarck was helped greatly by the use of Kissingen spring water.

Corpulence is due frequently to inherited tendencies in which case a fleshy person may be, and often is, a light eater. Not infrequently corpulence comes on a strong, healthy person as the result of high living and inactivity. Excessive corpulence is due sometimes to a diseased condition of the body which may or may not yield to medical treatment. An instance of the latter case is that of Daniel Lambert of Leicester, England, who died in 1809 in his fortieth year. Lambert ate moderately, drank water only, and slept less than an ordinary person; yet weighed 739 pounds. His waistcoat, still preserved, is so large that it may be buttoned around seven ordinary men. Lambert is supposed to have been the heaviest man that ever lived. He was only five feet eleven inches in height. Other cases are recorded in English journals. A grocer died in 1750, at the age of 29, whose weight was 616 pounds. Another young man, dying at 22, weighed 643 pounds. A girl of 4 is mentioned in scientific papers in 1813 as weighing 256 pounds.

It is stated on good authority that well proportioned men of middle age whose height is 5 feet 6 inches; 5 feet 9 inches; and 6 feet; should weigh about 150, 165, and 180 pounds, respectively. A woman 5 feet 2 inches in height should weigh about 125 pounds.

Corpuscle. See BLOOD.

Corregio, kōr-rĕd′jō (1494-1534), an Italian painter. He is noted for graceful figures and his handling of perspective. His pictures are highly prized in the galleries of Europe. His subjects are similar to those of Michelangelo and Raphael, with whom he is, in a way, associated and ranked; but he could be spared with far less disaster to art. *Holy Night,* his most celebrated painting, hangs in the Dresden Gallery. Artists consider it a masterpiece of light and shade. There are six of Corregio's paintings in this gallery. They cost Augustus $90,000. Others are to be found at London, Paris, Naples, Florence, and Rome; but most of Corregio's work was done by way of interior decoration for the churches of Parma. In the main dome of the Parma Cathedral, he painted the Assumption of the Virgin. Mary, the mother, is borne aloft by a host of rejoicing angels, while Christ, the Son, hastens to meet her. Corregio was the son of a Modena merchant. He lived chiefly in Mantua and Parma. He died without having visited Rome, Florence, or any of the renowned art centers.

Correlation. See MEMORY.

Correspondence Schools. See SCHOOLS.

Corrosive Sublimate, the bichloride of mercury, called "corrosive" because of its vigorous action on the body tissues, and "sublimate" because produced by sublimation. It is a heavy, white, crystalline substance, moderately soluble, and with an acrid taste. It is a virulent poison. The white of eggs is useful in counteracting its effects when taken into the stomach, but an emetic or the stomach-pump had better be used. It is a powerful antiseptic, and under the name "bichloride" is used in the bath after a contagious disease. It is to be carefully distinguished from the other chloride of mercury known as calomel. See MERCURY; CALOMEL; POISON.

Corsairs, pirates of the Barbary coast.

From the days when Barbarossa defied the whole strength of the Emperor Charles V, to the early part of the present century, when prizes were taken by Algerine rovers under the guns, so to say, of all the fleets of Europe, the Corsairs were masters of the narrow seas, and dictated their own terms to all comers. Nothing but the creation of the large standing navies of the present age crippled them; nothing less than the conquest of their too convenient coasts could have thoroughly suppressed them. During these three centuries they levied blackmail upon all who had any trading interests in the Mediterranean. The Venetians, Genoese, Pisans in older days, the English, French, Dutch, Danish, Swedish, and American Governments in modern times, purchased security by the payment of a regular tribute, or by the periodical presentation of costly gifts. The penalty of resistance was too well known to need exemplification. Thousands of Christian slaves in the bagnios at Algiers bore witness, to the consequences of an independent policy. So long as the nations of Europe continued to quarrel among themselves, instead of presenting a united line of battle to the enemy, such humiliations had to be endured; so long as a Corsair raid upon Spain suited the policy of France; so long as the Dutch, in their jealousy of other states, could declare that Algiers was necessary to them, there was no chance of the plague subsiding; and it was not till the close of the great Napoleonic wars that the Powers

agreed, at the Congress of Aix-la-Chapelle in 1818, to act together, and do away with the scourge of Christendom. And even then little was accomplished till France combined territorial aggrandizement with the rôle of a civilizing influence.—Poole, *Story of the Barbary Corsairs.*

Corset, a close-fitting underwaist made of stout cotton, linen, or silk, and stiffened with narrow bands of steel, whalebone, or similar substance. It is worn by women to insure well fitting gowns, and to support the skirts. The origin of the corset is unknown, but it is certain that the garment was worn in Cleopatra's time. For many centuries, the corset was little more than a bandage wound about the body. In the fourteenth century a corset was introduced which adapted itself to the figure. It was not worn, however, as an undergarment, but outside the other clothing. It was laced across the front, the edges being far enough apart to show an embroidered waist beneath. This garment was very popular, and in France was worn by both men and women. A hundred years later, a wooden corset made in two parts was worn for a time. Toward the close of the sixteenth century a corset made of thin metal slats in the form of lattice work was invented.

During the reign of Catherine de Medici of France lacing became fashionable. Catherine de Medici was vain and foolish. She prescribed thirteen inches as the proper measure for a woman's waist, and introduced a corset in the form of a steel cage or vise, which proved efficacious not only in compressing the waist, but in holding the body absolutely rigid after it was compressed. Queen Elizabeth's court was ever ready to ape the French; and men and women of both countries tortured themselves with these garments, in spite of a rapidly increasing death rate. Not until Henry IV of France issued an imperial order forbidding the use of these corsets was the injurious fashion stamped out. Many women evaded the law by having their dresses made with steels in the sides, and on the death of Henry IV corsets again became common among all classes. Early in the eighteenth century, the whalebone corset was introduced, and after that improvements were rapid.

At the present day there are more large corset factories in the United States than in any country in the world. The manufacture is interesting. The corsets are designed, cut, and fitted by men. The stitching is done by girls and women. The sewing machines are marvels of ingenuity. Some of them work with ten needles, often making from 1,600 to 1,800 stitches a minute. The corset is boned by hand. It is then trimmed, washed, starched, ironed, and shaped over heated blocks or forms. The best corset of today is not the rigid steel cage of Catherine de Medici's time. It is light and pliable, constructed with due regard to the different positions ordinarily taken during a day's work and recreation. It permits deep breathing, and in many instances is specially designed to enable the wearer to engage in the athletic sports so fashionable as well as healthful. The corset should not be a support for the body, but for the clothing, and if properly made and fitted is an easy and comfortable garment.

Corsica, a large island of the Mediterranean. It lies immediately north of Sardinia, 100 miles south of Genoa. Length, 116 miles; extreme width, 52 miles. The highest peak reaches an elevation of 8,889 feet. There are mines of lead and copper, plantations of olive, almond, and fig trees. Vineyards are numerous. The people are of Italian blood, language, and aspect. The island has belonged at various times to the Phoenicians, Carthaginians, Romans, Saracens, Pisans, and Genoese. It now belongs to France. Education is backward. Half of the people are unable to read and write. Local feuds are still bitter. The island is noted as the birthplace of Napoleon Bonaparte. See SARDINIA; NAPOLEON BONAPARTE.

Cortes, kôr′tĕs, the parliament or representative assembly—the congress—of Spain or of Portugal. The Cortes of Spain is an ancient body which has undergone many changes. Under the constitution, proclaimed in 1876, the present cortes consists of two independent houses—the Senate and the Congress. The Senate is composed of wealthy men in their own right—of 100 members appointed for life

by the crown and 180 elected members. The Congress includes one member for each 50,000 people. A measure must pass both houses before it can become a law. See CONGRESS; SPAIN.

Cortez, kôr′tez, **Hernando** (1485-1547), the Spanish conqueror of Mexico. He was a boy of eight when Columbus returned with his cargo of wonderful birds, animals, and products of the New World. At the age of nineteen we hear of him in the West Indies. At thirty-three he set out from Santiago, Cuba, for an exploration of Mexico. His force consisted of about 700 Spanish soldiers, 18 horses, and 10 small field guns. He landed at Vera Cruz, built a small fort, and burned his eleven small ships that his troops might have no occasion to think of them as a place of refuge. The details of the invasion are admirably told in Prescott's *Conquest of Mexico.* It is sufficient to say that his floating ships, his thunder-dealing guns, and horses with riders caused the unsuspecting natives to regard the Spaniards as messengers of the gods. The invaders were received with every honor and were loaded with hospitality. Cortez was no sooner in position to do so than he stirred up sedition, imprisoned the unhappy Montezuma, and delivered him to a cruel death. He made himself master of the country by a series of crimes for which even the lust of conquest and the need of securing the safety of his small army furnishes no shadow of excuse. It is a pleasure to know that jealousy of his fame and a desire on the part of others to share the gold of Mexico led to the curtailing of his authority and his final recall. The man who was able to boast to Charles V, "I am a man who has gained you more provinces than your father left you towns," was spurned actually from the presence of his sovereign. He died in Spain an embittered, neglected man. See AZTECS.

Corundum, a well known mineral. It is a compound of aluminum and oxygen. It is hard, ranking next to the diamond. There are three recognized types of corundum. The first is the gem called the sapphire. Five varieties are known. A second type is corundum proper. It differs from the gems only in lack of bright color. It is used as a polishing material. The third form is called emery, which is merely an impure corundum. There is an important corundum deposit north of Kingston, Ontario. Supplies are obtained also from New Jersey, Massachusetts, and the Carolinas. See SAPPHIRE; EMERY; GRINDSTONE.

Corydon, kŏr′ĭ-dŏn, a shepherd in one of the idyls of Theocritus, and in one of Virgil's eclogues. Hence the name is used in pastoral poetry and elsewhere to designate a shepherd or rustic. Spenser gives the name to a shepherd in the *Faerie Queene* and again in *Colin Clout.* Scott gives it to a shoemaker in *Count Robert of Paris.*

Cossacks, tribes inhabiting the southern and southeastern borders of Russia. Their origin is not understood. They seem of mixed blood, both Tartar and Russian. Some are settled as fishermen and graziers; but the typical Cossack leads a wild, free life on the steppes, not unlike that of the nomad Arabs. Their wealth consists in tents, horses, and cattle. They are permitted by the Russians to maintain a large degree of independence under chiefs chosen by themselves. Military service is the chief requirement made of them. Each Cossack furnishes his own horse—a tough, wiry, shaggy pony. The Cossacks form a body of light cavalry valuable for scouting and sudden onsets. They are audacious and skillful, and are seldom caught napping. They are devout members of the Greek Church, and are loyal to the czar. The authorities make frequent use of Cossacks to suppress insurrections. They have a fine contempt for agricultural peasants and workmen. They seem to have no sympathy with discontent or revolution. The number of Cossacks is placed by Russian authority at 3,000,000. See RUSSIA.

Cost of Living. See WAGES.

Costa Rica, kŏs′tä rē′kä, the most southerly republic of Central America. It extends from the Caribbean Sea to the Pacific Ocean, and from Panama to Nicaragua. The tenth parallel of north latitude passes very nearly through the geographi-

cal center. Area, 22,000 square miles. The coasts are fringed with tropical forests extending inland to an altitude of 3,000 feet. Oaks and chaparral come next. The vegetation of the mountain tops resembles that of the Andes. The highest peaks are volcanic. Eruptions have occurred no later than 1866. The wild animals are those of similar regions in South America—the armadillo, tapir, puma, deer, and numerous monkeys.

The people, about 400,000, are almost entirely of Spanish descent, with a few Indians and negroes. The little republic has a reputation for better schools and less illiteracy than any other country colonized by the Spanish. It threw off the Spanish rule in 1821, and has been independent since 1830.

San José, in the interior, is the capital. The government is modeled on that of the United States, though the Congress consists of one house. Gold, iron, copper, silver, petroleum, and coal are found in the mountains. Limón, the Caribbean port, is connected with the interior cities by several railways.

In 1912, 10,600,000 bunches of bananas were shipped to Galveston, New Orleans, Mobile, and English ports, as well as $3,000,000 worth of excellent coffee. The merchants of the United States and England sell large amounts of cloth, clothing, drugs, tools, and machinery for the mines and plantations. Paints, oils, flour, wheat, and lard are imported.

The alert reader should keep Costa Rica in mind as a self-respecting, proud, little country, putting forth a determined effort to be intelligent and thrifty.

Cotopaxi, kō-tō-păks′ē, the most remarkable volcano of South America. It is situated in Ecuador, but a few miles south of the equator. Its upper portion is shrouded in perpetual snow. It presents a perfectly conical outline. Seen from the Pacific it is a magnificent peak, 19,550 feet high. Steam is issuing from the crater at all times. Since 1698 a number of tremendous eruptions have taken place, the latest in 1885. It is said that in 1744 thunder-like explosions and rumblings were heard 600 miles away.

Cotter's Saturday Night, The, a poem by Robert Burns, published in 1786. This is one of the best and most famous of Burns' longer poems. It describes the home of a Scottish peasant on Saturday, when the father from the field and the children from service "amang the farmers roun" gather in the humble cottage rejoicing that the week's work is over. The brothers and sisters visit together, "each tells the uncos that he sees or hears." They give a portion of their earnings to the mother and listen to their father's counsels. A guest arrives and is welcomed, the simple supper is eaten, and all gather "round the ingle" for family worship. Then they separate, the older children to return to work, the little ones to bed, and father and mother are left alone. See BURNS.

Belyve, the elder bairns come drapping in,
At service out, amang the farmers roun':
Some ca' the pleugh, some herd, some tentie rin
A cannie errand to a neebor town!
Their eldest hope, their Jennie, woman grown,
In youthfu' bloom, love sparkling in her e'e,
Comes hame, perhaps, to show a braw new gown,
Or deposit her sair-won penny-fee,
To help her parents dear, if they in hardship be.

Wi' joy unfeign'd brothers and sisters meet,
An' each for other's welfare kindly spiers?
The social hours, swift-winged, unnoticed fleet;
Each tells the uncos that he sees or hears;
The parents, partial, eye their hopeful years,
Anticipation forward points the view;
The mother, wi' her needle an' her shears,
Gars auld claes look amaist as weel's the new;
The father mixes a' wi' admonition due.

VOCABULARY.

belyve, by and by
tentie, heedful, cautious
braw, fine, handsome
sair, sadly, sorely
spiers, inquires
uncos, news
gars, makes
claes, clothes

Cottolene. See COTTON.

Cotton, the fiber which surrounds the seed of several species of the cotton plant. Cotton grows on a bushy herb two or three feet high. It is contained in a three- to five-celled pod which bursts open when ripe. The open pod is called a boll. The cotton fiber is intended by nature to enable the wind to carry and scatter the seeds as it does those of the milkweed, cottonwood, and dandelion; but man has discovered that the soft fiber may be twisted into thread, and the thread woven into cloth. Cotton is the great cloth plant

of the world. The crowded population of Japan, China, India, Egypt, and the inhabitants of all warm countries—half to four-fifths of the human race—wear cotton clothes the year round. The peasants of the countries named never wear anything else. The use of clothing, and particularly of cotton clothing, is increasing rapidly. There is little danger, therefore, of raising too much cotton. If the entire world were civilized and able to dress properly, the cotton looms would require 42,000,000 bales a year.

Cotton cloth appears to have been made and worn before the dawn of history in three centers,—India, Northern Africa, and Central America. Columbus found Indians wearing cotton cloth, and Cortez found the Mexican Indians proficient in weaving a native cloth. Europe got its first cotton cloth from India, by way of the caravan trade. Calico is the Calicut cloth of India; muslin, the Moosoul cloth of Mesopotamia; cambric is the cloth of Cambrai, a town in France where it was first made from cotton brought from India. Europe appears to have taken an interest in cotton weaving shortly after the discovery of America. At first people, accustomed to linen and woolen goods, thought cotton good enough for a royal wedding dress.

Cotton was known in our southern colonies from the earliest times, but merely as a dooryard plant—an ornamental flowering herb. In 1739 a bag of cotton was sent to England from Savannah. In 1784, at the close of the Revolutionary War, eight bags of American cotton were seized at Liverpool on a suspicion that the colonies could not have produced so much. About this date cotton growing began in the United States in earnest, and ten years later Charleston had 1,000,000 pounds to sell. The industry went on slowly at first, because the cotton had to be pulled from the seed by hand. In 1793 an inventive Massachusetts Yankee, by the name of Eli Whitney, resident in Georgia, devised a cotton gin. It consists of a hopper into which the bolls are poured. One side of the hopper is composed of parallel wires, between which circular saws, fixed on a swiftly revolving roller, turn with rapidity and whip the fiber through the slits, while the seeds, too large to follow, rattle down to the bottom of the hopper and out into a pile by themselves. This device, which, by the way, brought Mr. Whitney no end of lawsuits and little profit, enabled planters to prepare large quantities of cotton for market. In 1791 we sold England 189,000 pounds; in 1803 we sold her 41,000,000 pounds; in 1810 our exports were 94,000,000 pounds; in 1820 we sold 128,000,000 pounds; in 1830 we had 271,000,000 pounds to spare, and so on up to 1860, when the American production of cotton had reached the astonishing figure of 1,462,500,000 pounds or 4,685,000 bales of 300 pounds each. The cotton crop began to bring in so much money that Senator Hammond declared on the floor of the Senate, 1858, "Cotton is king."

In 1790 the first successful American cotton mill—a factory for spinning and weaving cotton—was established in Pawtucket, Rhode Island. English invention (see articles on HARGREAVES and ARKWRIGHT) had built up a great cotton-weaving industry in that country. America had but to import English machinery and begin work. Four years later a second mill was erected. By 1810 there were 102 mills and 31,000 spindles; twenty years later, there were 795 mills with 1,250,000 spindles, or 33,000 looms. When the Civil War came we had 1,000 mills, employing 100,000 people, and consuming 420,000,000 pounds of cotton a year.

The fertility of the soil, cheap slave labor, and the use of the cotton gin, enabled America to raise most of the cotton needed in the world's markets. Our Atlantic States, from Virginia southward, all the Gulf States, and Tennessee, engaged in raising cotton. During the Civil War it was difficult for Northern mills to get cotton. Prices rose till calico sold for twenty-five cents per yard. On account of the blockade, or guarding of the Southern ports by Federal ships, England could scarcely get shipments at all; and the so-called Cotton Famine in Great Britain followed. Other countries were not prepared to raise large amounts, and many

COTTON

1. Seed
2. Planting
3. Cultivating
4. Flower
5. Bolls
6. Plant
7. Handpicking
8. Machine picking
9. Cotton Press
10. Weighing
11. Gin
12. Shipping
13. Spinning
14. Weaving
15. Batting, etc.
16. Carpets
17. Cloth
18. Seed Products

English mills were obliged to close, throwing thousands and thousands of people out of work and causing great financial disasters. The high price of cotton, in time, stimulated greater production, particularly in Egypt and India. When the Civil War was over the cotton plantations of the South, with buildings burned, negroes gone, and foreign markets occupied by new growers, were simply ruined.

Of late the natural superiority of American cotton, the establishment of cotton mills near the cotton fields, and a system of cultivation by small renters rather than on the now impossible large plantations, have given American cotton and American cloth a new ascendency. The United States now produces more cotton than ever. Our Southern states grow 13,500,000 bales a year, or eighty per cent of the world's cotton. The American cotton crop for 1913 was valued at $798,000,000. Europe now pays the United States $1,000,000 a day for cotton.

Cotton culture is not unlike that of corn or potatoes. Fields are plowed and fertilized and the seed is dropped in hills. Warm, steamy weather helps the young crop on rapidly. The planting begins frequently in February. It continues for about two months. During May and June the plants are cultivated. This work is done with a big, long-handled hoe, and is called "chopping cotton." The weeds are "chopped" out, and the rows thinned by cutting out the poorer plants. Then, for two months or more, there is no work in the cotton fields. In many cotton-growing regions in the South, this is the one time in the year when the children can be spared to attend school. Cotton raising need not impoverish the soil. The cotton fiber itself draws its elements from air and water. In selling a bale of cotton, a planter sells no part of his soil. If the stalks be returned to the soil and the cotton seed be fed to stock, a cotton farm should not run down.

During the latter part of September cotton picking begins. The bolls open gradually, and, as the cotton is picked from the open bolls only, the picking lasts a long time. The first light frosts hasten the opening of the bolls, and the bulk of the cotton is picked usually in October and November. The cotton is seldom all picked by Christmas time, and fields are seen as late as March still white with cotton. Usually a thrifty cotton grower gets his cotton picked before time to plant the next crop; but there is sufficient reason for the expression, "It takes thirteen months to raise a cotton crop." A good field hand can pick 200 pounds a day. A cotton picking machine has been introduced. It runs astride of a row. Two cylinders catch the cotton. In place of the grain elevators seen farther north, the railroad stations of the cotton-growing states are provided with cotton gins and cotton-baling machines. After ginning, cotton is compressed by machinery and bound by strap iron into bales weighing about 500 pounds. It is then ready for market. The cotton gin turns out about two-thirds seed and one-third fiber by weight. A bale of cotton and half a ton of cottonseed may be regarded as a fair yield per acre.

The seed, not unlike green coffee in appearance, was formerly thrown away as waste, but is now put through a heavy press. It yields a large amount of cottonseed oil, and a refuse known as oil cake. Oil cake is fed to stock. Cottonseed oil is used for a great variety of purposes. It is the oil out of which cottolene, a substitute for lard, is made. About 6,100,000 tons of seed, formerly left to rot behind the gins, is now utilized.

Cotton fiber is ordinarily from one-half to two-thirds of an inch in length. A fiber is merely a hollow, flat, cellulose tube, with a spiral twist. An especially fine, soft cotton, called Sea Island cotton is produced on the islands off the coast of Georgia. The boll is small; the seeds are black. It has a fiber two inches long. This cotton cannot so far be made to grow with entire success on the mainland, or in other parts of the world. It commands a high price. It is said that a thousand mile thread has been spun from it so fine that it weighed but a pound.

Cotton raising is not without its difficulties. Insect pests are hard to overcome

There are three serious insect pests, the cotton-stainer, the cotton-worm, and the cotton boll-weevil. The cotton-stainer is the least annoying. It is a species of insect in some degree like a chinch-bug, but longer. The body of the adult is red, with pale brown wing covers, marked with yellowish stripes. The young have black legs and red bodies. They feed by sucking the juice of the stems and buds of the cotton plant, and are especially dreaded because they stain the cotton in the opening bolls. They are also accused of puncturing the rinds of oranges so that the fruit soon decays.

The cotton-worm is the caterpillar of a small, night-flying moth. The moth lives over winter in the shelter of old grass. It lays its eggs in early springtime on the cotton plant when it is only an inch or two high. The caterpillars are hairy, green fellows, with black dots. They travel with a looping gait, like the cutworm and the measuring worm. The first generation hatches out in March. As soon as the caterpillar has matured and turned into a moth, the second generation travels northward and lays eggs. The Texas cotton worm moth is thought in this way to give rise to seven successive generations in the same growing season. The caterpillars strip the plants of their leaves and render a crop out of the question.

The cotton boll-weevil is a small, gray-reddish-brown, snout beetle about a quarter of an inch in length. It has a long, strong beak. It feeds on the cotton plant and nothing else. The adult female punctures the young cotton boll and deposits an egg. The egg hatches into a grub, which works inside the boll until it is ready to come out. It leaves a hole behind it through which moisture enters and utterly ruins the cotton. The cotton boll-weevil entered Texas from Mexico. It has been traveling northeastward at the rate of about seventy miles a year. The state of Texas offers a standing reward of $50,000 for a practical solution of the problem presented by this pest.

STATISTICS. The American cotton crop for 1920 was reported by the Department of Agriculture at 11,030,000 bales of 500 pounds each. The crop by states in running bales was as follows:

State	Bales
Virginia	22,000
N. Carolina	875,000
S. Carolina	1,475,000
Georgia	1,730,000
Florida	17,000
Alabama	715,000
Mississippi	946,000
Louisiana	300,000
Texas	2,700,000
Arkansas	830,000
Idaho	5,000
Tennessee	298,000
Missouri	60,000
Oklahoma	930,000
California	102,000
Arizona	75,000
Other	7,000
U. S.	11,030,000

CONSUMPTION.

	Spindles.	Bales.
United States:		
Cotton growing states.	10,429,000	2,476,000
All other states	17,589,000	2,723,000
Europe:		
United Kingdom	53,312,000	3,512,000
Germany	10,163,000	1,765,000
Russia	8,076,000	1,514,000
France	7,000,000	970,000
Italy	5,000,000	941,000
Austria-Hungary	4,352,000	795,000
Spain	1,900,000	327,000
Switzerland	1,497,000	110,000
Belgium	1,231,000	210,000
Portugal	451,000	62,000
Netherlands	425,000	85,000
Sweden	450,000	85,000
Denmark	78,000	23,000
Norway	76,000	11,000
Other European countries	220,000	75,000
British India	5,800,000	1,661,000
Japan	1,732,000	910,000
China	800,000	400,000
Brazil	1,000,000	375,000
Mexico	750,000	185,000
Canada	831,000	127,000
Other countries	215,000	55,000
Total	133,377,000	19,397,000

The corresponding totals for the year 1900 were:

Spindles	105,661,232
Bales	15,185,165

The leading states in the spinning of cotton are:

Massachusetts	9,415,000	1,155,000
North Carolina	2,861,000	609,000
South Carolina	3,617,000	591,000

	Spindles.	Bales.
Georgia	1,757,000	458,000
New Hampshire	1,318,000	247,000
Rhode Island	2,279,000	218,000
Alabama	934,000	202,000
New York	910,000	172,000
Maine	978,000	153,000

SUPPLY. The nearly 19,000,000 bales consumed by the cotton mills of the world were supplied by the following countries:

	Per cent.
United States	65.9
British India	14.8
Egypt	7.8
Russia	3.8
China	2.6
Brazil	2.2
All other countries	2.9

American cotton is exported from almost every station from which railways leave for Canada. Thus Minnesota and North Dakota appear in the list of cotton exporting states. The chief ports of cotton export in one year were:

	Bales.
Galveston, Tex.	2,301,000
New Orleans, La.	1,870,000
Savannah, Ga.	892,000
New York, N. Y.	619,000
Wilmington, N. C.	492,000
Mobile, Ala.	259,000
Brunswick, Ga.	176,000
Pensacola, Fla.	173,000
Boston and Charlestown, Mass.	156,000
Baltimore, Md.	117,000
Sabine, Tex.	108,000
Puget Sound, Wash.	101,000

The countries to which cotton is sent, and the number of bales exported to each in a recent year are as follows:

	Bales.
United Kingdom	2,956,000
Germany	2,385,000
France	889,000
Italy	418,000
Spain	262,000
Belgium	119,000
Russia	98,000
Austria-Hungary	90,000
Sweden and Norway	35,000
Netherlands	27,000
Denmark	4,538
All other European countries	22,000
Japan	200,000
Canada	113,000
Mexico	4,000
All other countries	4,000
Total	7,633,000

AMERICAN COTTON IMPORTATION.

Cotton fabrics	$13,460,000
Cotton yarns and threads	3,921,000
Threads, crochet and embroidery cottons	4,169,000
Knit goods	9,032,000
Lace curtains, laces and embroideries, edgings, etc.	33,611,000
Clothing ready made, not included in knitted goods	4,185,000
Total	$68,379,000

To the above must be added an importation (1908) of 69,000,000 pounds of Egyptian cotton. The *Bulletin* says:

There are four principal reasons for the extensive use of Egyptian cottons in the United States: (1) They are best adapted to mercerizing and other processes that give a high finish to cloth and cause it to resemble silk; (2) their exceptional clearness (freedom from nap) and luster, as well as their capacity for taking dyes, fit them for mixing with silk and for filling sateen, India linens, and similar goods having a brilliant surface; (3) the brown color of Mit Afifi fiber allows it to be used without dyeing in manufacturing goods, such as Balbriggan underwear and lace curtains, in which the ecru shade is desired; (4) they can be used for the manufacture of sewing thread and other articles which need to be very strong and for which no other type of cotton but sea-island is suitable. Owing to the higher price of the latter, Egyptian cottons can in many cases be advantageously substituted.

Except in cases where the brown-colored fiber is especially desired there seems to be little reason for preferring Egyptian to sea-island cotton, although one manufacturer reports that, within the range of the numbers used, the former furnishes a cleaner and better looking filling than either sea-island or peeler (long-staple upland) cottons. The highest grades of sea-island have longer and finer fiber than any other cotton, and therefore make stronger and finer yarns and thread. For these grades the Egyptian can not be substituted, but in manufacturing various classes of goods the somewhat lower price of Egyptian cottons allows them to be used to advantage in place of the lower grades of sea-island, especially when the supply of the latter is below the normal.

Apart from specific qualities of the fiber, American manufacturers give other reasons for preferring Egyptian cotton. They state that it is usually more carefully ginned, graded, and baled, and is apt to be freer from trash and short fiber, hence giving less waste in carding and combing than either sea-island or long-staple upland cottons. Egyptian cotton is also esteemed for its evenness of staple, the different grades showing little variation in this respect from year to year.

Egyptian cotton culture in the United States.—The Egyptian varieties are apparently best adapted to culture under irrigation in regions

where there is practically no rainfall during the growing season. The only part of the United States where these conditions exist and where at the same time the summers are long and hot enough for profitable cotton culture is the extreme Southwest, from western Texas to southern California.

Since this type of cotton will continue to produce bolls and ripen fiber until a hard frost occurs, it is obvious that the largest yields can be obtained in regions where the autumn temperatures are highest. We must therefore conclude that the greatest success with Egyptian cotton is to be expected in southern Arizona and southeastern California—a conclusion that is supported by the experience so far gained. The valleys of the Salt River and of the Colorado River (Yuma Valley) in Arizona and the Imperial Valley in California have been found to be admirably adapted to the production of this type of cotton.

Cotton Boll-Weevil, an insect pest of the southwest. Cotton has many enemies. Some of these foes are diseases of fungous, that is to say, of plant origin. Wilt, soreshin, and rootknot beset the roots and stems. Leaf-spot, leaf-blight, and mildew attack the foliage. The bolls, with their precious contents of white fiber, are subject to rot and shedding. Animal foes are even more numerous. There are red spiders, plant lice, cutworms and caterpillars, webworms, and borers. A blue-green caterpillar, marked with black spots and stripes, known as the cotton-worm, is produced from the eggs of a brown moth. A similar caterpillar, known as the cotton boll-worm, is troublesome in gardens and cornfields, as well as in the cotton field.

The chief pest of the cotton grower, however, is the cotton boll-weevil, which is said in the year 1907 to have destroyed in Texas alone no less than 1,000,000 bales of cotton, worth $50,000,000 or $60,000,000. There are 11,000 beetles in the United States, but the home of this particular one is supposed to be Central America. The eggs of this weevil came to the United States, it is thought, in 1902, having crossed the Rio Grande into Texas in Mexican cotton brought to Brownsville to be ginned. The pest has spread northward and eastward, advancing like the Colorado potato beetle, at the rate of about forty-five miles a year, and is now troublesome in Oklahoma and in Mississippi. The beetle deposits its eggs in the square, or young blossom of the cotton plant. Instead of blooming and producing seed, with the white fibers so prized in commerce, the square wilts and falls off.

This Mexican weevil is a most serious menace to the cotton district. The United States Department of Agriculture has detailed specialists to fight it. Researches in Guatemala reveal the presence of a large red ant that makes a business of eating the weevils alive. In Central America these ants are numerous enough to prevent the spread of the insect. Colonies of ants were transported to Texas and began the work of devouring weevils, but our climate seems to be too dry for the ants. They have not prospered. Hopes of success from their aid have faded, though it is just possible that in the moister parts of the cotton belt, along the Mississippi and eastward, in climatic conditions more like those of Central America, the Guatemalan ant may prove helpful.

The cotton boll-weevil does not stand the American winter well. Comparatively few individuals live over. Several generations live and die during the same summer. It is not until late in the same year that the weevils are sufficient in number to master a cotton crop. Scientists are devoting themselves at the present time to the task of breeding an early cotton—a cotton that will mature in about 100 days, and be ready to gather before the weevil army has massed in the fields.

Those who are studying the situation have hopes, also, that aid may come from a native Texan fly. The flies are small creatures. They have been accustomed to lay their eggs in the larvae of a weevil that infests strawberry beds; but of late, they have taken a notion to plunge their eggs into the cotton-boll weevil. In some localities, they appear to have reduced the cotton-boll pest very remarkably. It is just possible that this new ally may prove as valuable in our cotton field as has the ant in Central America. At least, this is the hope of the Southern farmer.

In unusually dry seasons the cotton boll-weevil suffers from the drouth. Like its fellow countryman, the Guatemalan ant, it is found at these times lying on the ground shriveled up and dead.

Cotton Gin. See COTTON; WHITNEY, ELI.

Cotton, John (1585-1652), a Puritan divine. He was born at Derby, England, and was educated at Cambridge University. In 1612 he became vicar of St. Botolph's Church in Boston, Lincolnshire, for which our New England city was named. He leaned to Puritan doctrines. In 1633 he was cited to appear before Archbishop Laud to answer for not kneeling at a certain point in the services. To escape persecution he fled to Boston, Massachusetts, where he was held in high honor as a pastor. One would think that his experience might have made him charitable toward the religious views of others, but such was not the case. He was one of the foremost to hunt Ann Hutchinson out of Massachusetts Bay. Nevertheless, now that kindlier feeling prevails the world over, it is pleasant to learn that a tablet to his memory hangs in the old English church of which he was once the vicar. See PURITANS.

Cotton Picker. See COTTON.

Cottonwood. See POPLAR.

Couch Grass. See QUACK GRASS.

Cougar, kōō′gär, the largest American animal of the cat family, called panther and "painter" in the Eastern States, mountain lion in the Rockies, and known sometimes as the American puma. Cougar is the name used by the Indians of Brazil. The cougar has a reddish, tawny color, very much resembling that of the deer, on which indeed it chiefly feeds. It is from six to eight feet long. A large specimen weighs 225 pounds. It is readily mistaken by a deer, it is said, for one of its own kind. The cougar hunts like a cat, taking its position on the branch of a tree overhanging the runway of the deer. It is an excellent climber. The cry of the male cougar is blood curdling, and has stricken terror into the heart of many a settler. The cry of the female is not unlike the wail of a child, a fact utilized by Cooper in his *Deerslayer*. The cougar has a wonderful cat-like faculty for stealing through undergrowth, over rocks, and past obstructions without noise. When deer fail, it springs upon rabbits, squirrels, grouse, small birds, and small quadrupeds. Its visits are dreaded by stock raisers from Montana to the Argentine Republic. It is still found in the Allegheny Mountains, but rarely. The cougar has a fierce, crafty, ferocious face; but, except in defence of its young, it seldom attacks man. It is hunted to best advantage with dogs, who drive it into a tree and hold it there until the hunter arrives with his rifle. A menagerie is expected to pay about $75 for a good live specimen. The cougar in the East has been described in many hunting stories. Theodore Roosevelt's *Hunting Trips of a Ranchman* gives some account of its depredations in the West. According to a peculiar custom, corresponding to tiger worship in India, the cougar was reverenced by the California Indians, who would not allow one to be killed. The skin of the cougar is much admired for rugs. A large skin is worth about $25. See CAT.

Council Bluffs, the county seat of Pottawattamie County, Iowa. It is said to have been named from the fact that in 1804 Lewis and Clark held a council with the Indians at this point. The city is located near the Missouri River, and is on the Union Pacific, the Chicago & North-Western, the Rock Island & Pacific, the Chicago, Burlington & Quincy and other railroads. Railroad and wagon bridges over the river connect Council Bluffs with Omaha and the city has acquired importance as a commercial center. Its manufactures include flour, paper, lumber, iron, agricultural implements, carriages, engines, and fire extinguishers. The city is well laid out and has fine buildings and beautiful parks. There is a public library, and the state institution for the deaf is located here. In 1920 the population was 36,162.

Council of Nice. See NICE.

Count, in spinning, the number given to thread or yarn to indicate the fineness. A "hank" of cotton contains 840 yards; when 60 such hanks are required for a pound, the thread is No. 60; if 80 hanks make a pound, it is No. 80, etc. The count of spun silk is made in the same way. The count of reel silk is based upon the number of thousands of yards to the ounce;

the count of worsted yarn, upon the number of hanks, each containing 560 yards, to the pound. The count of woollen yarns varies, but is usually based upon the number of thousands of yards to the pound. The count of linen yarn is based upon the number of "leas," each containing 300 yards, to the pound.

Counterfeiting, koun'tĕr-fĭt-ing, making imitations of money, either paper or coin. All countries punish the counterfeiter. For imitating paper money, the United States imposes a fine, not exceeding $5,000, and imprisonment for not to exceed fifteen years. For imitating coin, the fine is the same, with imprisonment not to exceed ten years. For making small coins such as cents and nickels, the penalty is not to exceed $1,000 fine and five years' imprisonment. Similar penalties are prescribed by statute for having counterfeit money or counterfeiting tools in one's possession.

The government takes great pains to make the counterfeiting of paper money difficult. The paper used is a fine, firm kind of linen, made by a special process during which red and blue silk threads are mixed with the pulp in a way that is difficult to imitate. When bought from outside parties the government places the manufacturer under heavy bonds not to sell to private persons. The counterfeiter is obliged to imitate the threads of silk by colored marks made with a pen. Then, too, the engraving of the note is done by expensive machinery which a counterfeiter cannot afford to own. An examination of a note will show that a single line winds round and round, wandering, one might say, all over the face of the note, forming scrolls and designs without a single break or irregularity or difference in breadth. Even the most skillful engraver cannot reproduce this scroll work perfectly by hand. Very few persons not in the employ of the government have the skill to do it at all. Government detectives keep track of the movements and occupations of all persons who are supposed to have extraordinary skill in such work. The United States detective service gives a pathetic account of a New Jersey engraver, a most skillful man, whose utmost industry enabled him to produce only one $20 greenback per week. Instead of earning an honest living, which his skill would have enabled him to do easily, he seemed to have a passion for going to New York City to pass off his weekly bill. He was caught finally and sent to prison, a fate which is almost certain to overtake the counterfeiter. In 1905 the United States secret service men made 532 arrests for counterfeiting. As to nationality, 392 were Americans; 42, Italians; and 15 were Austrians. Of these, 94 were taken in Pennsylvania and 77 in New York.

A favorite method of the counterfeiter is to raise the value of a bill from $2 to $20, but this is an exceedingly clumsy device and is detected easily. The government follows the policy of changing the designs of its notes quite frequently. Older bills are withdrawn from circulation. The work of counterfeiting bills is so difficult and requires so much skill that an engraver can make more money in the honest prosecution of his art.

It is easier to counterfeit coins. If the money could be cast it would be very easy indeed; but in order that a cast may be clear and sharp the metal must expand slightly in cooling, which is not the case with the precious metals. The counterfeiter must necessarily construct a sort of die with which to stamp his counterfeit money. The slightest irregularity or change in the stamp can be detected by a skillful banker. In the case of gold coins, the gold itself is worth as much as the coin, so that there is no profit in counterfeiting unless some cheaper material is used. A cheap material may be detected by its color, ring, and weight. For these reasons counterfeit gold coins are scarce. Silver coins, nickels, and cents are worth more than the material they contain. They are less difficult to counterfeit. Alloys of lead are used in place of silver; but the profit of counterfeiting in pure coin metal is quite sufficient to tempt the skillful rogue. Government detectives follow up all suspicious purchases of silver to make certain that the buyer intends to use it for honest purposes. When genuine silver is used, the only clue

to the counterfeit is in the patterns stamped on the faces of the coin. False silver coins sometimes counterfeit the genuine very closely. Having the same weight, ring, and color they are difficult to detect.

See COIN; MINT; MONEY.

Counting Glass, a magnifying glass used for the purpose of counting the threads in the warp or woof of woven fabrics. The magnifying glass or lens, usually small, is fixed in a small frame which is hinged to an upright. The upright is in turn hinged to a footpiece in which there is a square opening, one-fourth of an inch to an inch square. The three pieces of the instrument can thus be folded together and carried in the pocket. By the aid of the glass, it is an easy matter to count the number of threads crossing the square. The glass for counting threads in linen is called a Belfast linen prover.

Coursing, in the United States, following the large hare—the "jackrabbit"—with greyhounds. It is practiced chiefly in the prairie region west of the Mississippi from Texas northward. The hunt, on horseback, of course, is under control of a leader. When a "jack" starts up from his form in a tuft of grass two hounds are loosed. They follow by sight, but a course may extend over several miles. In a perfectly open country the odds are all against the hare. It jumps sideways or turns suddenly, allowing the hounds to pass; but unless it can reach rough ground, or get out of sight in cover, it has no chance for its life. The hound that catches the hare is not necessarily the winner. The hound that courses away leaving its competitor behind scores a point or two. The hound that overtakes and passes its competitor scores still more. Other scores are a quick turn at right angles, a turn at an acute angle, tripping the hare without seizing it, and actual killing. The various credits on points as previously agreed upon are kept on a card and footed. The hound having the greatest total is decreed the winner. The winners in two different couples are then matched for a course together, and so on. A hound wins a season according to the same rules that govern a winning football team. See HARE; DOG.

Court-Martial, a military court convened to try a soldier for an offense against military law, as mutiny, desertion, breach of orders, conduct unbecoming a soldier, etc. As provided by the statutes of the United States, a court-martial may consist of from five to thirteen commissioned officers above the rank of second-lieutenant. It may be convened by the commander. The members of the court must hold rank superior to that of the accused, that their chance for promotion may not be increased by his punishment. The finding of the court is of force only when approved by higher authority. In case of death penalty the finding must be approved by the secretary of war or the president.

Courts of Law, United States. Much confusion exists on this subject because certain state and federal courts are not designated uniformly. This confusion can be avoided largely by remembering that there are two great divisions of courts, the federal or national courts, with a jurisdiction somewhat narrowly limited by the Constitution of the United States; and the state courts before which comes the great body of business touching everyday life. These divisions will be treated separately.

FEDERAL COURTS. The Constitution provided simply for a Supreme Court and such inferior courts as Congress may from time to time establish. The Supreme Court was organized under President Washington; it consists of a Chief Justice and eight Associate Justices. The most important business brought before it touches questions of constitutional law appealed from lower federal courts or from state courts. Six judges must be present at each trial and a majority is necessary for a decision.

Directly below the Supreme Court are the Circuit Courts of Appeals; the United States is divided into nine great circuits, in each of which is a court. They were created in 1891 to relieve the overburdened Supreme Court. The act provided that a Justice of the Supreme Court be assigned to each circuit, that an additional circuit judge be appointed for each circuit, and that the judges of the United

States District Courts within that circuit be competent to sit as judges of the Circuit Court of Appeals. A Circuit Court of Appeals may consist of any three of these judges, two of which form a quorum, though of course no judge before whom a case has been tried in a District or Circuit Court may sit on trial or hearing of that case in the Circuit Court of Appeals. All cases appealed from the lower federal courts not involving a question of constitutionality go to this court; reserved for the Supreme Court are those only which involve a question as to whether or not a law is in harmony with the Constitution. It is rather easy, however, to raise this question, so the new court has not been able to fufill the expectation that it would relieve the great judicial body at Washington.

Formerly there was a Circuit Court, immediately below the Circuit Court of Appeals, but in 1911 this court was abolished, and now the District Court ranks next to the Circuit Court of Appeals. In 1920 there were 103 District Courts in the United States, including Alaska, Hawaii and Porto Rico. Each District has one judge. The jurisdiction of the district court extends to criminal prosecutions for violation of United States Laws; to cases connected with postal and revenue laws, and to cases in bankruptcy and admiralty affairs. Practically the District Courts have jurisdiction in all cases assigned by the Constitution (Article III) to the Federal Judiciary, except those cases in which the Supreme Court has original jurisdiction. All cases to which the Federal Laws directly apply, except those over which the Supreme Court has original jurisdiction, are begun in the District Court. Appeals from the District Court are taken to the Circuit Court of Appeals, unless the constitutionality of the law is questioned; such cases are appealed.

The Federal Courts also have jurisdiction over all cases affecting ambassadors, other public ministers and consuls, between two or more states; between a state and citizens of another state; between citizens of different states; between a state or its citizens and a foreign state or its citizens.

The other Federal Courts are: The Court of Claims having jurisdiction over all money claims of individuals against the United States; the Court of Appeals of the District of Columbia which hears appeals from the Supreme Court of the District of Columbia; the Supreme Court of the District of Columbia with jurisdiction similar to that of the other United States District Courts and Territorial Courts.

All United States Courts are overworked, and most of them are far behind on their calendars, so that months and even years may pass before a decision is reached in certain classes of cases.

STATE COURTS. Almost every man comes in contact sometime with the state courts, if it be only to serve on a jury or act as a witness in a lawsuit. The names by which the same courts are known in different states often vary, but in all the states there is practically the same progressive series of courts.

The courts of justices of the peace stand at the bottom of the scale. In them are tried civil cases involving small amounts, and petty offenses. In great cities such civil cases are usually tried in municipal civil courts, and the criminal actions in the police courts.

Most states have county courts, sometimes styled district courts or courts of common pleas. In them are tried suits involving considerable sums and cases appealed from justices of the peace. They have also extensive criminal jurisdiction. In many states there is a superior, circuit or district court, immediately above the county court, which has wide jurisdiction in civil and criminal matters. The judges for such a court are generally chosen for districts larger than the county, holding terms of court in each county of their district or circuit. Every state has a court of last appeal, known variously as supreme court, court of appeals, court of errors and appeals, or supreme judicial court, which deals usually with appeals on questions of law, not of fact. (Some cases may be taken direct to the U. S. Supreme Court.)

Besides these four, there are sometimes special tribunals for special purposes, such as probate courts, called also surrogates' and orphans' courts for trials involving the estates of deceased persons; juvenile courts for children who have committed offenses; and courts of claims for hearing claims against the state. See JURY; HABEAS CORPUS; MANDAMUS.

Cousin, koo-zăn', **Victor** (1792-1867), an eminent French educator and philosopher. Cousin was the son of a Parisian watchmaker in the famous Quartier St. Antoine. He saw stirring times in the days of his youth. When of suitable age he attended the Lycée, or Latin school, in his part of the city. Later he entered the normal school of Paris, in which he became an instructor in Greek. During the intolerant days of Louis XVIII the normal school was abolished, and Cousin, who had acquired quite a reputation as a rising philosopher, was thrown out of his position. Losing no time on this account he took up his studies in earnest; traveled, mainly in Germany, and published several treatises. After seven years, a change in government restored him to his work, and he became professor of philosophy in the University of Paris. His lectures were brilliant and earnest and gave a new impetus to the subject.

In 1830 Cousin's colleague, Guizot, became the head of a new ministry, and he was invited to leave his lecture room for a membership in the council of education. Thirty years before, the French Revolution had promised France adequate public schools, and it now became Cousin's privilege to draft a bill establishing such a system, and to plan and work for its development. Abstract philosophy and the pleasures of scholarship were laid aside. Cousin traveled again extensively, investigating the systems of schools in Europe. Two reports, one on the *State of Primary Education in Several of the States of Germany, Particularly Prussia,* another on *Public Instruction in Holland,* attracted world wide attention. They were translated into English. Reprints were distributed at state expense in Massachusetts and New Jersey. Without doubt these reports were the beginning of a popular belief in the superiority of German schools.

Cousin was the recipient of many honors and distinctions, but he was kind enough to say, "None has touched me more than the title of Foreign Member of the American Institute for Education." Victor Cousin is now most frequently quoted as a philosopher; but his claim to renown will rest finally on the service he was happily enabled to render the cause of public education.

Covenanters, adherents of the early church of Scotland. When James VI, the Presbyterian king of Scotland, became James I of England, he also became the head of the Episcopal church. His son, Charles I, who was afterward beheaded, showed a disposition to substitute the church service and prayer book of England for the Presbyterian forms of worship in Scotland. The Presbyterians bound themselves by a covenant in 1638 to resist. In 1643 the Scottish leaders formed a solemn league and covenant with the Parliament of England, then largely Presbyterian, to oppose Episcopacy throughout England and to set up churches on the Presbyterian model. After the restoration of Charles II to the throne of England, he undertook to root out Presbyterianism in Scotland. A period of persecution followed. The Covenanters, as the adherents of the Presbyterian faith were called, were in hard straits. They were obliged to hold their meetings in unfrequented places surrounded by bogs, among the mountains, in caves and elsewhere. Oftentimes their meetings were surprised. Several hundred persons were put to death by English troopers. In the eye of English authorities, their faith came to be regarded as treasonable, for the Covenanters were all sworn opponents of the Stuart family. Persecutions ceased with the accession of William and Mary in 1688. The Presbyterians again resumed services in their accustomed places of worship. In the meantime many families had migrated to the Carolinas, where their descendants gave a good account of themselves in the American Revolution, as may be seen in histories of that famous contest.

The following inscription from the kirkyard of Old Cathcart, near Glasgow, is one of many hundreds of similar import:

THIS*IS*THE*STONE*TOMB*OF*ROB
ERT*THOME*THOMAS*COOKE*AND
JOHN*URIF*MARTYRS*FOR*OUNNG
THE*COVENANTD*UORK*OF*RE
FORMATION*THE*11 OF*MAY*1685.
THE*BLOODY*MURDERS*OF*THESE*MEN
UERE*MAGOR*BALFOUR*AND*CAPTAIN*METLA
AND*UITH*THEM*OTHERS*UERE*NOT*FREE
CAUSED*THEM*TO*SEARCH*IN*PALMADIE
AS*SOON*AS*THEY*HAD*THEM*OUT*FOUND
THEY*MURTHERED*THEM*WITH*SHOTS*OF*GUNS
SCARCE*TIME*DID*THEY*TO*THEM*ALLOU
BEFOR*THER*MAKER*THER*KNIES*TO*BOU
MANY*LIKE*IN*THIS*LAND*HAVE*BEEN
WHOS*BLOOD*FOR*WINGANCE*CRYS*TO*HEAVN
THIS*CRUELL*WICKEDNESS*YOW*SEE
WAS*DON*IN*LON*OF*PALMADIE
THIS*MAY*A*STANDING*WITNESS*BE
TUIXT*PRESBYTRIE*AND*PRELACIE.

The graves of the Covenanters are to be found in the old churchyards all over southern Scotland. They are guarded with special reverence. In accordance with the custom of the times, the gravestones are large slabs, the size of a grave. They lie flat on the ground, sometimes so close together as to form a sort of pavement. When the letters are worn shallow by frequent tramping, they are recut. In *Old Mortality,* Walter Scott describes an odd character whose business it was to recut inscriptions.

Covent Garden, a garden once belonging to the abbot of Westminster. The original spelling was Convent. The old garden was cultivated by monks. It was surrounded by a wall, and extended from the Strand to the open country. In 1552 the land, some seven acres, passed into the hands of the Bedford family as a gift from the king. This gift was accompanied by a permit to maintain a market, with which none should be allowed to compete. Market gardeners sold their vegetables here. In 1831 the Duke of Bedford erected vast market buildings, in which the housewife may do her shopping. He derives a revenue of $75,000,000 a year from rentals. London citizens complain of this monopoly and point to the fact that the city of Manchester derives a revenue of $70,000,000 from a similar market owned by the public. The Covent Garden Market is now one of the sights of London. It is the greatest fruit, flower, and vegetable market in the world. The utmost neatness is required. From eight to ten in the morning the show of fruit and the fragrance and brilliancy of the flowers convert the market into a paradise. The Garden gives its name to the locality, and to a number of buildings in the vicinity, including Covent Garden Theater, open only to money and full dress.

Coventry, a city in Warwickshire. It is an old English town. A Benedictine monastery was established in 1044 by the Lady Godiva. As early as 1392 mystery and morality plays were presented by the Gray Friars. A series of forty-two of these plays, covering Bible history from the creation of the Garden of Eden to the Last Supper and the day of resurrection, has been preserved, and is known as the *Coventry Plays.* They are of first importance to the student who is endeavoring to understand the early English drama. The city was fortified. It is stated that at one time Coventry had a military garrison of such repute that a woman seen conversing with a red coat was at once reckoned an outcast. The citizens would hold no intercourse with the soldiers, not even with the officers. Very naturally a young officer, likely enough of good family, was averse to being "sent to Coventry," where he would be debarred from desirable associations. Whatever its exact origin the phrase still lingers. When army men cut the acquaintance of a fellow officer they are said "to send him to Coventry," and when one is excluded from polite society he is said to be "sent to Coventry." The Coventry of today is a modern city. The old walls have disappeared. The cathedral fell in the reign of Henry VIII. According to Chambers the present parish church is the largest in England. Few old buildings remain. Coventry is a manufacturing and market town of some note. The city was at one time famous for the manufacture of ribbons. It is now known for bicycles, clocks, and watches. There are railway connections and an extensive canal system. The population in 1909 was about 80,000.

Coverdale, Miles (1488-1568), an English bishop and reformer. He was educated at Cambridge and was ordained a priest at Norwich in 1514. He was led to embrace the reformed doctrines. In 1535 he published a translation of the Scriptures, dedicated to Henry VIII. This was the first printed version of the entire Bible. He went to France and was engaged in superintending the printing of a revised English version, when interrupted by the ecclesiastical authorities, who seized and destroyed the greater part of the impressions already completed. The types and presses were taken to England and enabled Cranmer's Bible, called the Great Bible, to be printed. Coverdale was made bishop of Exeter during the reign of Edward VI; but, on the accession of Mary, he was ejected and thrown into prison. After two years he was liberated and went abroad, where he assisted in preparing the Geneva Bible. His writings are numerous.

Coverley, Sir Roger de, the chief member of an imaginary club under whose direction the *Spectator* was professedly edited. The character was originally sketched by Steele, but developed by Addison. Sir Roger is represented as a country gentleman, simple minded but warm hearted, amiable, and eccentric. See ADDISON; SPECTATOR.

Sir Roger de Coverley is not to be described by any pen but that of Addison. He exhibits, joined to a perfect simplicity, the qualities of a just, honest, useful man, and delightful companion. . . . Addison dwelt with tenderness on every detail regarding him, and finally described Sir Roger's death to prevent any less reverential pen from trifling with his hero.—Tuckerman.

Covington, the county seat of Kenton County, Kentucky. It is situated on the Ohio River opposite Cincinnati, with which city it is connected by a fine suspension bridge 2,250 feet long. Many Cincinnati business men have made their homes in Covington, which has thus gained note as a city of fine residences. It has also a public library, a United States government building, and a Roman Catholic cathedral with which are connected a foundling asylum, a hospital, an academy, a priory, and a convent. Covington is the center for farming and livestock interests of north central Kentucky. It is served by two railroads and has steamboat connections with all point on the Ohio River. Its industries include pork-packing and the manufacture of flour, tobacco, distilled liquors, glass, leather, tinware, stoves, furniture, bricks, and pottery. In 1920 the population was 57,121.

Cow, the adult female of the ox kind. The term has been extended to include many other, chiefly large animals, as the cow moose, cow whale, etc. A female calf is called a heifer. For some notion of the economic importance of the cow, see articles on BUTTER and CHEESE.

Our best dairy cows are obtained from particular districts of Europe. The brown Swiss, a middle-sized, small-boned, gentle cow with a black nose, tongue, hoofs, and tail, comes from Switzerland. Holstein cows are large black and white animals with an enormous yield of milk of not inferior quality. Individual cows of this breed are credited with as high as 20,000 pounds of milk in a single year. The Ayrshire breed of red and white cows originated in Scotland. The Devon cow from South England is almost entirely red. The Jerseys and the Guernseys are from the Channel Islands between England and France. Durhams are a large red and white breed from England, celebrated more for beef; yet a Durham, or short horned cow is reported from Wisconsin as yielding 584 pounds of butter in a year. Her owner states that it cost him $39.60 for feed, and that the total value of her production was $131.83. The cow is a wonderful producer of food. The Nebraska experiment station claims a cow that produces 17,000 pounds of milk yielding 650 pounds of butter in a year. The Princess Carlotta, a Holstein cow owned by the dairy department of the University of Missouri, in one year produced 18,405 pounds of milk,—more human food in her milk than is contained in the complete carcasses of four steers weighing 1,250 pounds each. Successful dairymen consider that it costs no more to keep a productive animal than a poor one.

The importance of the cow in modern civilization may be seen by the following statistics taken from the last United States census. It should be remembered that the United States is only one of a number of countries in which cows are kept for dairying purposes.

Total number of cows in the United States	20,625,432
Average yield of milk in gallons	282
Annual yield of milk in gallons	5,813,699,474
Annual production of cheese in pounds	9,405,864
Annual production of butter in pounds	994,650,610

To this enormous production must be added the cow's share of beef and leather.

The United States Department of Agriculture gave the following estimate of the number of milch cows in the country, January 1, 1920:

COWS.

Vermont	278,000
New York	1,493,000
Pennsylvania	970,000
Virginia	437,000
West Virginia	250,000
North Carolina	328,000
South Carolina	211,000
Georgia	461,000
Ohio	1,061,000
Indiana	724,000
Illinois	1,060,000
Michigan	873,000
Wisconsin	1,846,000
Minnesota	1,395,000
Iowa	1,353,000
Missouri	919,000
North Dakota	464,000
South Dakota	561,000
Nebraska	601,000
Kansas	935,000
Kentucky	457,000
Tennessee	384,000
Alabama	502,000
Mississippi	571,000
Louisiana	378,000
Texas	1,138,000
Oklahoma	550,000
Arkansas	452,000
Washington	228,000
Oregon	224,000
California	571,000
Other states	1,800,000
	23,747,000

From 1910 to 1918 the average price for milch cows increased from $32 to $70.50. In 1921 it was $85.13.

Cowbird, a member of the blackbird family. The male has a coffee-colored head, neck and breast of brown, with a glossy black body, lustrous with bluish and greenish reflections. The female is clad in a dark, brownish gray suit. Range, from Texas to Manitoba and eastward. Small flocks of a dozen or fewer individuals follow cattle about the pasture and haunt the milking yard, apparently for the insects they can catch. The cowbird builds no nest. The female leaves the flock, sneaks about, and drops her egg in the nest of a sparrow or other small bird. She leaves it to be hatched and her young to be reared by the unsuspecting dupe. The young cowbird is large, greedy, and selfish, frequently shouldering the rightful occupants out of the nest. When well grown it leaves its drudging foster mother and joins those of its own kind. For the characteristics of an English bird of another family, but with similar habits, see CUCKOO.

Cowley, Abraham (1618-1667), an English poet. At the age of fifteen, while attending Westminster School, he published his first volume of poems, *Poetical Blossoms.* He was elected a scholar of Trinity College, Cambridge, where he attained literary distinction. He was ejected from Cambridge as a royalist, and removed to Oxford, where he published a satirical poem entitled *The Puritan and the Papist.* Still identified with the Royalists, he followed Queen Henrietta to France in 1646, where he remained until 1656. He returned to England and settled at Chertsey. Among his poetical writings are *Miscellanies, The Mistress, Pindarique Odes,* and an unfinished epic on King David. In prose he wrote *Proposition for the Advancement of Experimental Philosophy, Discourse by Way of Vision concerning the Government of Oliver Cromwell,* and others. As a poet he was extremely popular in his day, but fifty years after his death his poetry was already a thing of the past.

QUOTATIONS.

Hope, of all ills that men endure,
The only cheap and universal cure.

Nothing is there to come, and nothing past,
But an eternal now does always last.

God the first garden made, and the first city Cain.

Thus would I double my life's fading space;
For he that runs it well, runs twice his race.

I would not fear nor wish my fate,
But boldly say each night,—
To-morrow let my sun his beams display,
Or in clouds hide them; I have lived to-day.

Abraham Cowley, who at one time was ranked amongst the greatest of our poets, is now read by few. He is a curious relic of that school of poetry which rejected simplicity as beneath the dignity of verse, and aimed at expressing the most extravagant thoughts in the most hyperbolical language. Wit and learning he undoubtedly had; but in his poetry his learning becomes pedantry and his wit affectation. His prose writings, unlike his poetry, are elegant without exaggeration.—Knight.

Cowley was an author by profession, the oldest of those who in England deserve the name.—Taine.

Cowpea, a summer annual, in appearance resembling the field bean. The cowpea is a native of India and possibly of China. In the East it has been under cultivation for the last two thousand years. In the cotton belt of the United States, the cowpea takes the place of the red clover of more northern and cooler regions. The leaf of the cowpea is tri-foliate. The flowers vary from purple to white. The pods are from five to ten inches in length and are well filled with kidney-shaped or roundish peas. There are numerous varieties. Several, known as crowders, are so called because the beans are crowded together so closely as to have flattened ends. So far as frost is concerned, the cowpea is very tender. Along the Gulf seed is sown in April. In Delaware it is sown as late as July. Like clover and alfalfa, the roots of the cowpea bear tubercles that store up nitrogen. The raising of a crop of cowpeas fertilizes the soil. The crop is cured like a crop of clover or alfalfa. Stacks of cowpea hay have little power to turn rain. The crop, therefore, requires barns or other protection.

Cowpens, a battlefield near the northern border of South Carolina, not far from King's Mountain. It was covered with timber and undergrowth. General Morgan, with 900 men, January 17, 1781, took position on two knolls, with his rear on the Broad River so that his militia could not run away. Tarleton, the famous cavalry commander of Cornwallis, attacked with 1,100 men. The American militia deployed in front, used their rifles with good effect, and drew away into shelter. Tarleton, thinking the day was his, sounded a charge straight for the river. He was met by a central force of American riflemen, good for a squirrel's head at a hundred paces. The militia under Andrew Pickens reformed in shelter of a hill and fell on one flank; the American cavalry under William Washington fell on the other. Altogether they made short work of the British. Two hundred and seventy were killed and wounded; 600 were taken prisoners; and over 1,000 muskets were captured. Only twelve Americans were killed. Tarleton fled with a handful of followers. The defeat, coming so soon after King's Mountain, was a severe blow to Cornwallis, and encouraged the American patriots greatly. See CORNWALLIS.

Cowper, William, pronounced cooper (1731-1800), an English poet. His father was court chaplain. William was trained for the law. He received a government clerkship, and lost his mind while studying to take examinations. He sank into a sort of religious mania from which, however, he emerged to write a number of elevated, graceful poems. He died in utter madness and despair. His more mature poems are: *Moral Satires,* written in imitation of Pope; *The Task,* in praise of a quiet, secluded country life, a poem much admired by Burns; a *Translation of Homer; The Loss of the Royal George,* a warship that went down in the English Channel with terrible loss of life; *To Mary,* in honor of a lady friend; *Alexander Selkirk,* opening with the well known lines,

I am monarch of all I survey,
My right there is none to dispute;

and lastly, *John Gilpin's Ride,* betraying an unexpected but none the less delightful vein of humor and fun in the poet's makeup.

SAYINGS.

God made the country, man made the town.

Not much the worse for wear.

How much a dunce that has been sent to roam,
Excels a dunce that has been kept at home.

Absence of occupation is not rest,
A mind quite vacant is a mind distress'd.

An idler is a watch that wants both hands,
As useless if it goes as if it stands.

His wit invites you by his looks to come,
But when you knock, it never is at home.

Oh for a lodge in some vast wilderness.

Variety's the very spice of life.

She that asks
Her dear five hundred friends.

Knowledge is proud that he has learn'd so much;
Wisdom is humble that he knows no more.

SAID OF COWPER.

Cowper was the most popular poet of his generation, and the best of English letter writers.—Southey.

Poor charming soul, perishing like a frail flower transplanted from a warm land to the snow: the world's temperature was too rough for it; and the moral law, which should have supported it, tore it with its thorns.—Taine.

Cowper's style is natural and firm, though sometimes dull. He helped to rid poetry of its artificiality.—Emery.

Cowry, a small shell of eastern waters, formerly in demand by the natives of western Africa for ornaments. Strings of cowry were used to purchase ivory or any other commodity the negroes had to sell. British merchants used to collect immense quantities of money cowry in the East Indies for purposes of barter. Three hundred tons a year were brought to Liverpool during the middle of the nineteenth century. Cowry shells still have value among some tribes. The money cowry is about an inch long and is almost as wide. Roughly speaking, it may be likened to a small egg slit the length of one side with the edges tucked in. It has a yellow or white shell, not especially beautiful. When the English took possession of India, cowry shells were in regular use as money, at the rate of about one-sixth of a cent per dozen. See WAMPUM; BARTER.

Cowslip, a beautiful flowering plant of Europe. It belongs to the primula family. A number of scapes, a hand's breadth or more in height, spring from a rosette of soft, oval leaves. Each bears a one-sided umbel of fragrant yellow flowers. As is the case with the robin, American settlers have brought the name to America. It has been given to plants that have no relationship to the English cowslip. Among the flowers falsely called cowslips are the marsh marigold of early spring and the Virginian lungwort or bluebell. The shooting star, with its blue pendulous flowers and recurved petals, is related to the cowslip of Europe. It may be called the American cowslip. See CYCLAMEN; PRIMROSE.

Cox, Palmer (1840-), an American artist and author, creator of the "Brownies." He was born at Granby, Quebec, and educated at the Granby Academy. When but twenty-three years old he went West, living in San Francisco until 1875, where he wrote and sketched for periodicals. He removed then to New York, where he published the inimitable illustrated "Brownie" verses, among them *The Brownie Stories, The Brownies at Home, The Brownies in Fairyland, The Brownies through the Union,* etc. They appeared first in popular periodicals.

Coxey, Jacob Selcher (1854-), the leader of "Coxey's Army." Mr. Coxey was born in Pennsylvania. He worked in a rolling mill, became the owner of a sandstone quarry at Massillon, Ohio, where he still lives (1909), a prosperous man, worth perhaps $200,000. Originally an Episcopalian, he became interested in theosophy. He took an interest in public affairs. In 1892 he urged Congress to issue legal tender treasury notes to the value of $500,000,000 to be expended in building good roads. In 1894 he arranged with Mr. Carl Browne, whom he had met at a silver convention, to lead an army of the unemployed to Washington to present a petition to Congress on the steps of the Capitol, and to camp there until favorable action had been taken. Senator Peffer of Kansas was to introduce the desired measure—a good roads bill which should give unemployed men work. Payment was to be made in legal tender paper currency, to be had for the cost of printing. The army was to enlist 100,000 men. As a matter of fact it never exceeded 500 men. "The Commonweal of Christ," as the army was called, started from Massillon

Easter morning, March 24, 1894. It was a motley, but orderly crowd. Some were tramps; some were men out of employment. A negro carrying the flag of the United States led the way. Carl Browne, clad in fringed buckskin and wearing a cowboy's broad brimmed sombrero, rode a gray mare. Next marched the trumpeter, "Windy Oliver," followed by "Cyclone" Kirkland of Pittsburg and seven musicians. General Coxey himself, the owner of a fine Kentucky farm, rode in a buggy drawn by a pair of bay mares. Mrs. Coxey, her sister, a daughter, and an infant son named "Legal Tender," followed in a carriage. Behind these strode a second negro bearing a banner with a portrait of Christ and a legend, "Death to interest-bearing bonds." About one hundred men formed the army proper. Ninety-nine thousand nine hundred more were expected to join the army on the way. Three wagons carried a circus tent and supplies. Forty-three newspaper reporters accompanied the procession. The army encountered a snowstorm in crossing the Blue Ridge Mountains. A few stragglers were arrested as vagrants and quarrels arose; but, on the whole, good order prevailed. Supplies were solicited or were tendered freely. General Coxey boasted that "not a chicken was stolen." The progress of the army was heralded widely by the reporters. Congress was nervous. The risings of the English, Wat the Tyler, and Jack Cade were brought to mind. The army reached Washington late in April. On the first of May the "Commonweal of Christ" marched solemnly to the Capitol steps amid an immense concourse of spectators. When General Coxey dismounted he and Mr. Carl Browne and a Mr. Jones were arrested for "trespassing on the grass." The army went back to camp. The leaders were held for twenty days. The army disbanded by degrees. Other armies were organized, particularly in Chicago; but, with the coming of improved financial conditions, the movement came to an end. In 1895 Coxey was the People's Party candidate for governor of Ohio, and polled 52,000 votes. His party, however, gradually fell to pieces.

Coyote, kī'ō-te, or **Prairie Wolf**, a small, meager, yellowish wolf of the plains. It forms a burrow or den in the ground like the fox. Five to seven puppies come in May. Its natural food consists of sage hens, eggs, small birds, jackrabbits, and any other animal food it can find. It is a serious pest to the herdsmen, assailing calves and lambs, and even sheep in its hunger. It is rather wary about taking poison, is too swift for hounds, and keeps out of gunshot. Its wail at night often terrifies intended victims. Mark Twain's description cannot be improved:

> The coyote of the farther deserts is a long, slim, sick, and sorry-looking skeleton with a gray wolf skin stretched over it, a tolerably bushy tail that forever sags down with a despairing expression of forsakenness and misery, a furtive and evil eye, and a long, sharp face. He is always poor, out of luck, and friendless. He is so spiritless and cowardly that, even while his exposed teeth are pretending a threat, the rest of his face is apologizing for it. And he is so homely! So scrawny, and ribby, and coarse-haired, and pitiful! When he sees you he lifts his lip and lets a flash of his teeth out, and then he stops and takes a deliberate survey of you again; and, finally, the gray of his gliding body blends with the gray of the sage-brush, and he disappears.

The Coyote was so proud that he determined to have a dance through heaven itself, having chosen as his partner a certain star that used to pass quite close by a mountain where he spent a good deal of his time. So he called out to the star to take him by the paw and they would go round the world together for a night; but the star only laughed, and winked in an excessively provoking way from time to time. The Coyote persisted angrily in his demand, and barked and barked at the star all round heaven, till the twinkling thing grew tired of his noise and told him to be quiet and he should be taken next night. Next night the star came quite up close to the cliff where the Coyote stood, who leaping was able to catch on. Away they danced together through the blue heavens. Fine sport it was for a while; but oh, it grew bitter cold up there for a Coyote of the earth, and it was an awful sight to look down to where the broad Klamath lay like a slack bow-string and the Cahroc villages like arrow-heads. Woe for the Coyote! his numb paws have slipped their hold on his bright companion; dark is the partner that leads the dance now, and the name of him is Death. Ten long snows the Coyote is in falling, and when he strikes the earth he is smashed as flat as a willow-mat.—Coyotes must not dance with stars.—Robinson, *Legend of California Indian*

Crab, a popular name used to designate a large number of crustaceans—shellfish. The crabs are to be distinguished from lobsters, crayfish, prawns, and shrimps by shortness of body. The abdomen or so-called tail of the body is reduced in size and is folded under the thorax, giving the body a broad, stout appearance. Crabs have stalk eyes and ten jointed legs. The front pair of legs is developed into large pincer-like claws. In the case of marine crabs one pair of legs takes the form of fin-like swimmerets. Crabs can scrabble over the sand in any direction, but they prefer to step sidewise. They have stout bodies covered with a firm shell, and look not unlike spiders in armor. There are many species not closely related. There are marine crabs and land crabs, swimming crabs and crawling crabs. There are large crabs and small crabs,—giant crabs, with arms so long that they open eighteen feet at the stretch, and peacrabs so small that they are able to live with the oyster in its shell. Some crabs live near the salt water; others live in it. Some species live on vegetable matter; other species, on snails, minnows, small shell-fish, and carrion. Anything fleshy, dead or alive, they crowd into the stomach with their pincers. The stomach is furnished with horny projections. It contracts and works like the gizzard of a chicken to crush and grind food.

Crabs are great scavengers. At some seaside resorts they render service in keeping the shore clean. Shoals of them come up at night and act as scavengers. Crabs are of many colors, blue, red, purple, and green. Some are phosphorescent. The blue crab is esteemed for food, and may be found in the markets of seaside cities. It is taken by letting a bit of meat down into the water by a string. The crab seizes the meat with its pincers and holds on tenaciously until it is drawn to the surface, when it is an easy matter to take it with a landing net before it lets go.

The sand crab has the color of sand, and hastens to bury itself to the eyes if a footstep approaches. Where a seashore was alive with them a moment before, nothing can be seen by the stranger, though many a pair of eyes are fixed upon him. The fiddler crab—not a true crab—fairly swarms along the shallow ditches of the Gulf States. It gets its name from one abnormally large pincer and one abortive one, suggesting a fiddle and a bow. The hermit crab, another distant relative, thrusts its soft tail into some empty shell for protection. The larger it grows the larger the shell it needs, a truth so impressed on the hermit that it squabbles with its neighbors constantly. A large hermit has been known to force a dozen other hermits to allow him to try on their shells, only to go back to his own as the best after all.

The land crabs of the West Indies hide in holes in the daytime. At night they come out and pinch off the young shoots of the sugar-cane. They are so numerous that planters regard them as a serious pest.

The largest crab known is the spider crab of Japan. Its scuttles about on the floor of the ocean 2,000 feet under water. It is said to have a spread of eighteen feet from claw to claw.

See CRAYFISH.

Crabapple, a close relative of the apple. There are not less than seventy species. The crabapple has handsome leaves and beautiful fragrant flowers. The hawthorn of the English poets—the pride of English hedgerows—is a crabapple. The "crabs" or crabapples of our orchards are merely small, hardy kinds of apples adapted to northern latitudes, and brought, several of them at least, from Siberia. It would save confusion if we could use the English word hawthorn for our small fruited trees that are not apples. See APPLE; HAWTHORN.

Crabbe, krab, **George** (1754-1832), an English poet. He was born at Aldborough, Suffolk. He was educated as a surgeon, but, failing to get a living in his native village, he went up to London. He was befriended by Edmund Burke, and finally turned clergyman. His later years were spent peacefully in the discharge of the duties of his parish at Trowbridge, Wiltshire. He was universally esteemed. His chief writings are *The Village, The Parish Register, The Borough,* and *Tales of the Hall.* Crabbe uses the two-rhymed

couplet in the greater number of his poems. His style lacks polish and musical rhythm. It is, however, direct and unaffected, and not without dramatic qualities. He describes simple village life with truth and vigor, but shows the trials of the poor in harsher light than does Goldsmith in the *Deserted Village.*

QUOTATIONS.

Nor you, ye poor, of lettered scorn complain,
To you, the smoothest song is smooth in vain;
O'ercome by labour, and bowed down by time,
Feel you the barren flattery of a rhyme?
Can poets soothe you, when you pine for bread,
By winding myrtles round your ruin'd shed?
Can their light tales your weighty griefs o'erpower,
Or glad with airy mirth the toilsome hour?
—*The Village.*

Books cannot always please, however good;
Minds are not ever craving for their food.

But 't was a maxim he had often tried,
That right was right, and there he would abide.

He tried the luxury of doing good.

SAID OF CRABBE.

A Pope in worsted stockings.—Smith.

Nature's sternest painter, yet the best.—Byron.

An admirable foil to the insincerity of the fashionable pastoral.—Courthope.

Cracow, krā′kō, an ancient Polish city. It is situated on the Vistula, at the head of navigation. It was the capital of Poland from 1320 to 1609. Even after the removal of the capital to Warsaw the kings were crowned here, just as the czar of Russia is crowned at Moscow. The cathedral, completed in 1359, is the burial place of the kings and the national heroes of the Polish people. The chapels are decorated with a number of fine monuments and notable works of sculpture, among others a Christ by Thorwaldsen. A silver shrine of St. Stanislaus, the patron saint of Poland, stands in the middle of the church. Other noted buildings are the Church of St. Mary, the Tuchhaus, or Cloth Hall, and the Museum. The University of Cracow, in which Copernicus was a student, was founded in 1364. At the dismemberment of Poland it fell gradually into decay, but was reorganized in 1817. It has a fine libary of 300,000 volumes. A monument of Kosciusko, 120 feet in height, stands on a hill near the city. Cracow is the metropolis of Austrian Poland. Population in 1907, 104,836, one-fifth of the number being Jews.

Near Cracow is a most remarkable salt mine. It is a veritable underground world. The mine has been worked for a thousand years. Story after story has been excavated, one beneath the other. Each floor rests on salt pillars rising from the floor below it. Visitors go down from floor to floor amid dazzling whiteness. A thousand men are employed. There are sixty-five miles of halls and galleries and twenty-two miles of tramways. Bags and barrels of salt are piled up in ricks, like those seen in a flouring mill. A village has been built underground. Men, women, and children, beasts of burden and domestic animals, live there generation after generation. A large chapel or church 100 feet high has been carved out of the salt. There are seats, pillars, an altar, and statues, all of glistening rock-salt.

See POLAND; KOSCIUSKO.

Craddock, Charles Egbert, the pen-name of Miss Mary Noailles Murfree, an American novelist. See MURFREE, MARY NOAILLES.

Cradle of Liberty. See FANEUIL HALL.

Craik, Dinah Maria Mulock (1826-1887), an English novelist and poet, commonly known as Miss Mulock. Her first novel, *The Ogilvies,* was published in 1849. Her reputation was made, however, and is maintained by *John Halifax, Gentleman,* published in 1857. The story was circulated widely, and was translated into several languages. It is still popular. It is the touching, yet optimistic story of the simple life of a noble man. In all Mrs. Craik produced about twenty novels. *A Brave Lady, A Noble Life,* and *Olive* are among them. They are entertaining stories of wholesome tone. *Philip, My King,* and *Douglas, Tender and True,* are two of Mrs. Craik's poems which one desires to know. The latter has been set to music, and at one time had great popularity.

Crake. See RAIL.

Cranberry, a creeping member of the heath family, closely allied to the wintergreen and blueberry. The large or American cranberry trails its thread-like vines

over wet peat bogs from North Carolina to Minnesota and northeastward. Its oval leaves are evergreen. The red, solid, cherry-like berries weight their slender pedicels over into the moss in so perfect an arch as to suggest the name crane—or cranberry. Stewed cranberries are a favorite fruit on an American table. Turkey with cranberry sauce has become quite as indispensable a Thanksgiving adjunct as the traditional Christmas goose and apple sauce of England. The use of cranberries is not so well understood in England. A gentleman, acknowledging the receipt of a barrel sent by an American friend as a present, stated that the fruit arrived very fine in appearance, but that it had evidently soured on the way over.

An ideal place for raising cranberries is a natural cranberry marsh, with a supply of water brought under control by a system of dams and ditches so that the vines may be flooded to save the flowers from a late frost in spring, or the young fruit from an early frost in autumn, and yet so under control that the marsh may be dried out for planting and picking. It is often desirable also to flood the plants against an attack from insects. When possible, a reservoir, like a mill pond, is constructed at the head of the marsh. A flooded marsh looks like a lake.

New Jersey, Cape Cod, and Wisconsin are the centers of cranberry production. Large tracts, once deemed worthless, now yield handsome incomes. Wild cranberries are shipped from Nova Scotia to Boston. The Cape Cod growers, who appear to have gone about the business most thoroughly, consider an expense of $200 to $400 an acre desirable. The swamp is first cleared of loose moss, sticks, and stumps, pared to an even surface; then covered with four inches of sand. Cuttings—bits of runners six inches long—are dropped in rows and pressed into the sand obliquely, so that about an inch is above the surface. The field is kept clear of weeds by hand picking. A marsh is expected to come into full bearing in three or four years.

In time of emergency, as before an expected frost, or when old vines have about outlived their usefulness, a picker, made after the fashion of a scoop, with a bottom toothed like a comb, is used; but ordinarily cranberries are picked by hand at an expense of fifty cents a bushel. Men, women, and children come from a distance during the cranberry harvest to pick the berries. Fifty bushels an acre is a fair yield, which has been crowded up to 200 bushels. Growers expect $4.50 to $6.00 a barrel, though a price of 50 cents a bushel is recorded for May, 1894. The cranberry crop of the United States for 1910 was 1,195,000 bushels. The area of cultivation is increasing. In 1910 New Jersey was reported to have an area of 9,000 acres planted to cranberries; Massachusetts, 6,200; Wisconsin, 1,700 acres. Michigan, Maine and Connecticut follow in the order named.

See BLUEBERRY.

Crane, a wading bird, classified near the heron. There are three North American species. The whooping crane is fifty inches in length. The plumage is white, save that the tip of the head and the sides of the neck are red, and the wing coverts black. It bred formerly from Illinois northward in unfrequented places, and wintered in the Gulf States. The whooping cranes migrated in single file with outstretched legs and neck. This species is practically extinct. The sandhill or brown crane of somewhat more southern range is a brownish gray bird, forty inches in length. It is noted for its antics in the breeding season, which have been likened aptly to an Indian war dance. In pioneer days the sandhill crane was so numerous and so familiar from Nebraska to Minnesota as to dispute the possession of the autumn stubble fields with the turkeys, but the most courageous "gobbler" was glad to retire before the powerful wing and sharp beak of the crane. There is also a third American species known as the little brown crane. It ranges from Alaska to Mexico. See HERON.

Whenever the days are cool and clear,
The sandhill crane goes walking
Across the field by the flashing weir,
Slowly, solemnly stalking.
The little frogs in the tules hear,
And jump for their lives if he comes near;

The fishes scuttle away in fear
When the sandhill crane goes walking.

The field folk know if he comes that way,
Slowly, solemnly stalking,
There is danger and death in the least delay,
When the sandhill crane goes walking.
The chipmunks stop in the midst of play;
The gophers hide in their holes away;
And "Hush, oh hush!" the field-mice say,
When the sandhill crane goes walking.
—Mrs. Mary Austin, in *St. Nicholas.*

Crane, a mechanism for raising heavy weights, transporting them limited distances and lowering them into desired positions. When used for lifting only, it is often called a derrick. The common form has a tall, upright shaft, set in a socket at the base with an oblique arm having a pulley in the upper and outer end. The weight may be raised by a crank on the shaft, which is then revolved till the object is over its desired position, when it may be lowered. It has a wide use in quarries, machine-shops, etc., the traveling crane, however, becoming more common in the latter. In this device the apparatus is mounted upon a track or trestle and is operated by an engine or motor. When it is iron that is to be lifted, powerful electromagnets are utilized.

Cranefly, a mosquito-like fly. It is often mistaken for an overgrown mosquito. Despite its long legs and wings, the cranefly is a stumbling walker and a poor flyer. Its natural home is in meadows. Its eggs are deposited in the ground. The second pair of wings is reduced to club-like appendages. Chambers states that the cranefly of England is called Peter-long-legs and that its larvae do serious damage to the roots of growing crops. Anyone who has watched the cranefly try to take care of six long legs at once can sympathize with the distressed owner.

My six long legs, all here, all there,
Oppress my bosom with despair.

Crane's Bill. See GERANIUM.

Cranes of Ibycus. See IBYCUS.

Cranford, a story by Mrs. Elizabeth Gaskell, published in 1853. This little book is a charming picture of quiet life in an English village. The people, particularly the women of this village, are described by Mary Smith, an observing young person from a nearby town. The women of Cranford scorn the "vulgarity of wealth," and practice "elegant economy." The story is full of a quaint and almost pathetic humor. Its popularity seems to increase, and it is already counted as a classic. In recent years two American women have produced books which may be compared with *Cranford* and not suffer by the comparison: *Old Chester Tales* by Mrs. Deland, and *Friendship Village* by Zona Gale. The following is from *Cranford:*

For keeping the trim gardens full of choice flowers without a weed to speck them; for frightening away little boys who look wistfully at the said flowers through the railings; for rushing out at the geese that occasionally venture into the gardens if the gates are left open; for deciding all questions of literature and politics without troubling themselves with unnecessary reasons or arguments; for obtaining clear and correct knowledge of everybody's affairs in the parish; for keeping their neat maid-servants in admirable order; for kindness (somewhat dictatorial) to the poor, and real tender good offices to each other whenever they are in distress,—the ladies of Cranford are quite sufficient.

"A man," as one of them observed to me once, "is *so* in the way in the house!"

See GASKELL, MRS. ELIZABETH.

Cranmer, Thomas (1489-1556), the first Protestant archbishop of Canterbury. A scion of an old Norman family. As a boy he was fond of hunting and riding. At Cambridge University Cranmer was skilled in the learned languages and in the Scriptures. In 1523 he was appointed a lecturer on theology. In 1528 Henry VIII desired a divorce from Catherine, the first of his six wives. Hearing that Cranmer had suggested that the case be tried, not before the Pope, but be "tried according to the word of God," Henry was so delighted that he asked, "Who is this Dr. Cranmer? Marry, I trow he hath the right sow by the ear." From this time on, Cranmer was Henry's right hand adviser. He was made a royal chaplain, and was sent on a mission to Rome and to the emperor. He married Henry to Anne Boleyn, and helped him get rid of both her and his fourth wife. Cranmer was active in furthering the English reformation and in pulling down the monasteries. An edition of the Scriptures is

known as Cranmer's Bible. Whenever the English people showed signs of going back to Catholicism, Cranmer stood for the new church. Under his influence pictures and images were ordered out of the churches. Communion was made to take the place of mass. An English book of common prayer took the place of the missal and breviary in use. When Henry's death and the short reign of Edward brought Mary, the Catholic daughter of Catherine to the throne, and Cranmer into the power of his old foes, it is small wonder that he was arrested and tried on charge of heresy. In hope of saving his life Cranmer signed six recantations, that is, took back all he had ever said or done against Catholicism; but his enemies could not be appeased so easily. March 21, 1556, Cranmer was haled from the gaol of Oxford, taken to church to hear his own funeral sermon, and was burned alive at the stake in front of one of the university buildings.

Crape, krāp, a fabric of silk, wool, or cotton whose surface is crinkled by small, irregular ridges or puckers. In making silk crape a hard twisted thread is used for the weft, and sometimes for both warp and weft. A group of wefts is woven into the warp; then another group the threads of which are twisted in the reverse direction. The threads are woven with more or less space between them; when removed from the loom they untwist, each in its own direction. In making the best qualities of crape both warp and weft threads are twisted. This gives elasticity to the fabric in both directions. When only weft threads are twisted the elasticity is only from side to side. The crinkled surface of crape reflects little light, and thus permits color to be seen to advantage. Silk crapes in rich colors have special beauty. They are used for evening gowns, neck scarfs and similar purposes.

English mourning crape is given its elasticity and crinkled surface, not by weaving, but by a process of pressing between ridged and crisped rollers. Japanese silk crape, one of Japan's most notable textiles, is produced by a process similar to that employed in the manufacture of American crape. The weft threads are twisted in two directions. The web, however, is boiled after removal from the loom. It is then washed, rolled, stretched, and dried in the sun. The result is a soft, clinging, rich, and beautiful fabric.

Cotton and wool crapes are produced by similar methods. A paper, having the crinkled appearance and elastic qualities of the cloth of that name, is called crape paper. The name crape is the English spelling of a French word, signifying crisp or wavy.

Crash, a coarse, inexpensive, plain-woven linen fabric used for toweling. It is woven usually in narrow widths. It may be bleached, but is sold frequently in the natural color. A smoothly woven quality is used for summer suits by both men and women, and is called crash suiting.

Crater. See VOLCANO.

Cravanette, cra-ve-net′, a closely woven, fine twilled, worsted cloth, used largely for men's summer coats and vests. A light weight of fine quality is used for women's suits and dresses. Cravanette, made waterproof by a special process, is used for mackintoshes and raincoats. The uniforms worn by the Salvation Army and the Volunteers of America are made of this waterproof cravanette.

Crawford, Francis Marion (1854-1909), an American novelist. He was born in Italy. His father, Thomas Crawford, was an American sculptor. Young Crawford was educated at Concord, New Hampshire, and at Cambridge, England. He also studied at Heidelberg and Rome, acquiring a wide knowledge of languages and their respective literatures. He was for two years the editor of a paper at Allahabad, India. He married the daughter of General Berdan, U. S. A., in 1884, and settled in a permanent home near Sorrento, Italy. He joined the Catholic church. He died in April, 1909.

Mr. Crawford was a hard worker. His efforts were confined principally to the writing of novels, though he did some work in critical philosophy and philology and wrote one play, *Francesca di Rimini,* which Sarah Bernhardt produced in Paris in 1902. Many of his works have been trans-

lated into foreign languages, and, as a mark of recognition of his ability, the French government bestowed upon him the Monbrun prize and a gold medal.

In twenty-eight years Mr. Crawford produced forty novels and historical works. He is believed to have reached a larger public than any other American novelist for fifty years. It is interesting to know that in a little book entitled, *The Novel, What Is It?* Mr. Crawford has expressed his own views as to what a perfect novel should be. He does not believe in the "novel with a purpose," but thinks a novel should be an "intellectual, artistic luxury." He says it must be "clean and sweet, for it must tell its tale to all mankind. . . . Its romance must be of the human heart and truly human, that is, of the earth as we have found it. Its idealism must be transcendent, not measured to man's mind, but proportioned to man's soul." Thus he suggests that union of the real and the ideal, which we find exemplified in so many of his stories. Of Crawford's novels, *Mr. Isaacs* was the earliest and is intensely interesting. It is a romantic tale, involving the occult. The series, *Saracinesca, Sant' Ilario,* and *Don Orsino,* dealing with Italian life among the nobility, is doubtless his strongest and finest work. Others are *Casa Braccio,* which Crawford himself considered his best, *Zoroaster, A Roman Singer, The Children of the King, In the Palace of the King,* and *Via Crucis. Ave Roma Immortalis* is a history of Rome which reads like a novel.

Crawford is the most versatile and various of modern novelists.—Andrew Lang.

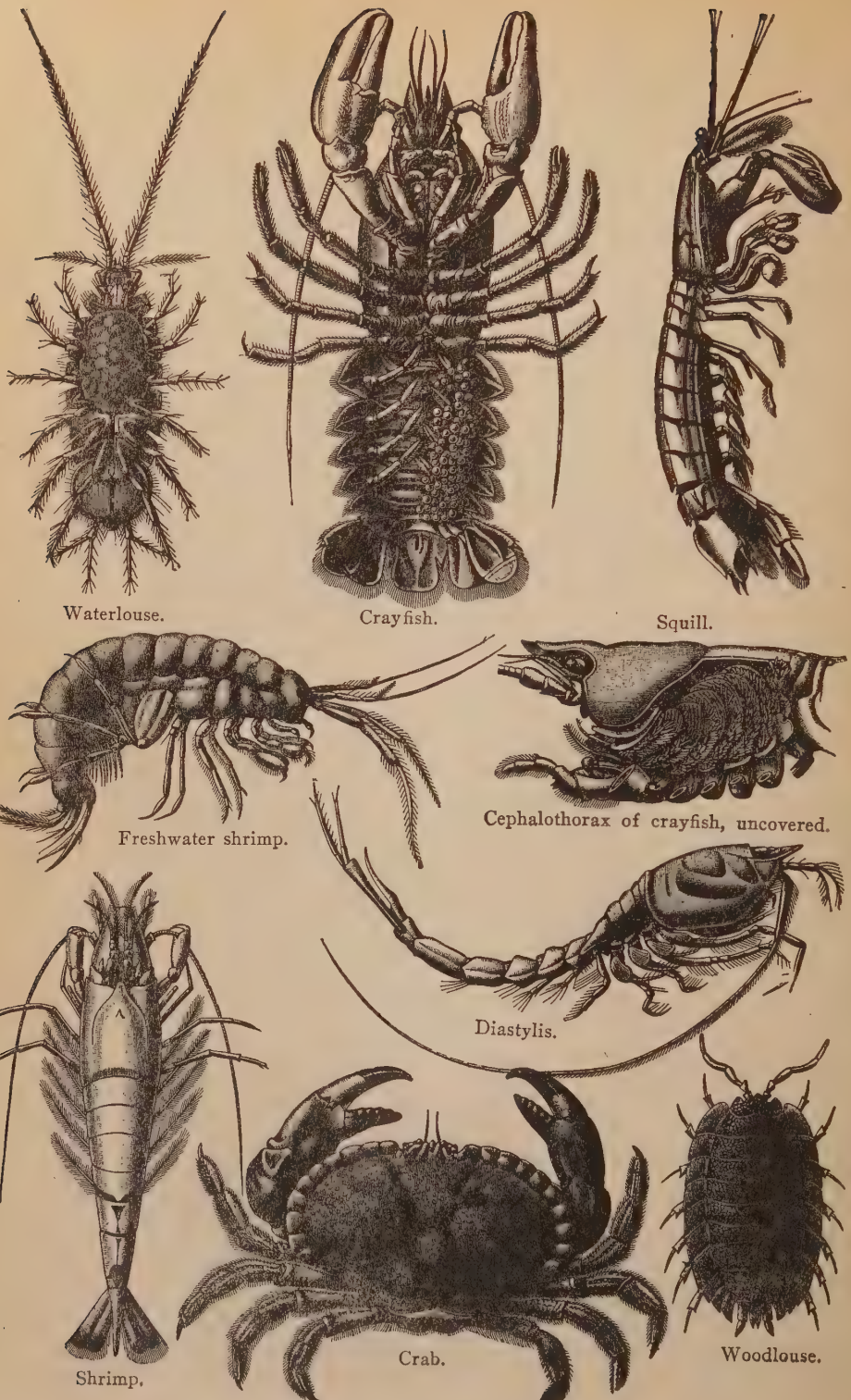
When Crawford first "found himself" as a writer of fiction at the age of twenty-eight, the result was like the rush of an artesian well when rock is pierced, and one book followed another in rapid succession. Those who think that he forced himself to write are mistaken; the writing forced him. When he was at work on a novel he was possessed by it—he heard the characters speak and saw them move, and they were as real to him for the time as living men and women. No novelist who has written many books is always at his best—there would be no "best" if that were so—but Marion Crawford, from first to last, gave all that was in him to his work, and a proof of its high average is that half a dozen people will often give as many different opinions as to which is his "best book."

To those who knew Crawford well no such presence will ever come again. His devotion to his family and to those friends outside it whom he loved; his high sense of honour, his absence of vanity, his simplicity of nature, and his generosity of thought and deed combined to make him a companion who was always desired. It may truly be said that much as he gave the world, he left it nothing so good as what died with him.

Crayfish, a familiar fresh-water relative of the lobster and the crab. The crayfish crawls about at night on four pairs of legs, either forward, sidewise, or backward, examining muddy bottoms for worms, larvae, snails, etc. The huge pincers, or modified fifth pair of legs which he carries, are useful in crushing weak shells and in tearing food into pieces. When alarmed he brings his fan-shaped tail under his body with a vigorous swoop that causes his body to dart backward with great swiftness. A repetition of the movement and the raising of all the mud he can are his means of escape from the prowling fishes that would gladly give him a nightly shelter. When water is low and his mudflat is exposed the crayfish sinks a well which he constantly deepens as the waters recede, heaping up a ring of marble shaped pellets about the entrance. It is said that a hungry raccoon inserts his paw in the burrow and churns the water up and down. When the crayfish comes up to see what the commotion signifies, the wily coon flips him out, and the burrow is ready for another occupant. At all events, boys in search of "crawfish" bait run an arm up and down in the burrow, churning up mud. A pair of fingers is held in the muddy water at one side of the burrow until first a pair of feelers, and then a pair of stalked eyes appear cautiously at the surface. A quick motion at the critical moment and the crayfish is out. Otherwise, once he sees the bait-catcher, a flip of his tail takes him down to stay down till times are more propitious.

The crayfish is hatched from an egg, and is several years in attaining his full growth. Whenever his shell becomes too small, which occurs several times the first year, he molts it and grows a new one.

Crayfish are common in North America and in Europe, Madagascar, Australia, and Japan, but are found seldom in Asia and



CRAYFISH AND RELATIVES.

South America and not at all in Africa. The shores of New England are too rocky to favor crayfish. On the lower Mississippi, they cause great damage by perforating the dikes or levees, and giving the surging floods a start at breaking through.

See CRAB.

Crayon. See CHALK.

Crayon, Geoffrey, jĕf′fry krā′un, a pseudonym of Washington Irving, over which he published the *Sketch Book* and other writings. In Irving's complete works, one volume is entitled *Crayon Miscellany.* See IRVING, WASHINGTON.

Cream of Tartar, tär′ter, a white crystalline powder composed of tartaric acid and potassium. It is obtained from the lees, that is to say, the sediment or dregs of wine. It is valuable not only in medicine, but as the essential element of the best baking powder. Efforts have been made to manufacture the drug direct from the juice of the grape. A California association has offered a prize of $25,000 to the scientist who shall make known a method of manufacturing cream of tartar from the juice of the grape, without going through the intermediate process of wine making and settling. Such a discovery would give additional value to the grape crop of that state, as well as decrease the price of an expensive household necessity. See BREAD.

Creamery. See BUTTER.

Crecy, or Cressy, krĕs′sĭ, a village in the northeastern part of France. It is noted for a famous battle, August 26, 1346, in which Edward III of England with an army of 40,000 men defeated the flower of the French chivalry. This battle is reputed as the first in which cannon were used by English troops, "which, with fire threw little iron balls to frighten the horses." This battle is significant also in that English yeomen armed with the bow gained a victory over gentlemen in armor. The battle of Crecy has been termed the death knell of feudalism—the beginning of the rise of the common people in England and France. Not only were 1,200 French knights left dead on the field of battle, but the usefulness of heavy armor—the possession, the dependence, and the defense of the wealthy and the noble—was past. "The churl had struck down the noble," says Green. In this battle the king's eldest son, Edward the Black Prince, of whom we hear in English history, won great renown for bravery. See BLACK PRINCE.

Credit Mobilier, mo-bē′lier, in United States history, a corporation chartered to build railways. It was an early instance of graft on a large scale. The company was formed in Pennsylvania in 1863 with a capital of $2,500,000. The name adopted was that of a former French banking company with a somewhat similar history. In 1867 the stock was increased to $3,750,000, and the company undertook the building of the Union Pacific Railroad. For a few years enormous dividends were paid and the stock rose rapidly in value. When the exposure came it was found that many honored members of Congress—men who had voted large national bonuses to assist in building the railroad—were stockholders in the Credit Mobilier, and that the company had received outrageous prices for its work. In other words, the organizers of the Credit Mobilier gave stock to senators and representatives in exchange for votes that granted the Union Pacific securities wherewith to pay three prices for the building of the road. A committee of the Senate recommended the expulsion of one member; but no action was taken. A committee of the House recommended the expulsion of two members; but the House contented itself with votes of censure. A number of congressmen were, however, retired from public life; and a connection with this scandal (probably innocent for the most part) cost James G. Blaine the election to the presidency.

Creek. See AMERICANISM.

Creeks, krēks, a tribe of American Indians. They are related to the Seminoles and Cherokees, as well as to the Choctaws and Chickasaws. At their height they numbered from 20,000 to 30,000. They occupied the greater part of Alabama and Georgia. They cultivated gardens and fields of corn, dressed comfortably, and lived in log houses plastered with clay. Their villages were along the streams. They were skillful in the man-

agement of dugout canoes, and in hunting and fishing. Their influence was courted by the English and by the Spanish authorities on the Gulf. They aided the forces of Cornwallis during the Revolution, and at its close afforded a harbor for Tory refugees driven from the southern colonies. During the War of 1812 a band fell on Ft. Mimms near Mobile and massacred 500 men, women, and children. The entire nation was punished severely in the battle of Horseshoe Bend in 1814. Two thousand warriors were slain. In 1825-28 their lands were taken by the United States. In 1836 about 25,000 Creeks were transported to Indian Territory, where they settled with their slaves, and still form one of the Indian nations. During the Civil War they divided. About 1,000 enlisted in the Union army. The Confederate section drove the others out of the territory. The number has been increased by whites and negroes to 40,000, but the Creeks proper number about 8,000. A few hundred escaped from the troops at the time of the removal, and still linger in their native mountains, trapping, hunting, fishing, raising patches of corn, and acting as guides for white hunters. See INDIAN TERRITORY.

Creeper, in American ornithology, a small bird six inches long, with white under parts and upper parts of mixed colors, giving the general impression of brown. The brown creeper breeds from Maine and Minnesota northward, hiding its nest in a hole or behind a piece of loosened bark. It has a stiff tail which it uses, woodpecker-fashion, as a prop in climbing. It may be seen examining the bark of trees, an occupation well described by Chapman.

> The patient, plodding brown creeper is searching for the insects, eggs, and larvae which are hidden in crevices in the bark; after watching him for several minutes one becomes impressed with the thought that he has lost the only thing in the world he ever cared for, and that his one object in life is to find it. Ignoring you completely, with scarcely a pause, he winds his way in a preoccupied, near-sighted manner up a tree trunk. Having finally reached the top of his spiral staircase, one might suppose he would rest long enough to survey his surroundings, but, like a bit of loosened bark, he drops off to the base of the nearest tree and resumes his never-ending task.

Cremation, the process of burning, or reducing to ashes the bodies of the dead. Doubtless this method of disposal of dead bodies was prevalent in prehistoric times. Ancient graves have been found in many places which contain no bones, but instead there are urns holding funeral ashes. Previous to the time of Christ cremation was the general practice among civilized nations, with the exception of the Egyptians, who embalmed the bodies of their dead, the Jews who laid them in sepulchers, and the Chinese who buried them in the ground. That burial came to be almost a universal custom was due, probably, to several causes, chief among which was the belief in the resurrection of the body. Cremation, for sanitary reasons, began to be urged as early as the seventeenth century, but not until the latter part of the nineteenth century did the matter receive much attention either in Europe or America. Many eminent physicians published their views on the necessity of cremation as a safeguard to public health, especially in densely populated districts. Thus the idea gained ground. In 1876 a semi-private crematorium was erected in Washington, Pennsylvania. The first public crematorium in the United States was opened in New York City in 1881.

Although the process varies as to details, that employed at this New York crematorium will give a fair idea of the usual custom. The body, removed from the casket which is burned separately, is wrapped in an alum-soaked sheet and placed in a retort, which is then subjected for several hours to extreme heat. The bone ash, which by reason of its greater weight, is separated readily from the ashes of the clothing, is gathered and sealed in a canister. A chapel at the crematorium may be used for funeral services if desired.

At the close of the year 1900 there were in the United States twenty-four crematoriums at which 13,281 bodies had been cremated. The objection to cremation, despite the statements of physicians as to its necessity, seems to be strong. It is, however, a matter of sentiment which can have no foundation of sufficient strength to stand against the needs of protecting the health of the living. The time is not far distant,

probably, when cremation will have become a universal custom.

Cremona, krē-mō′na, a city on the northern bank of the Po, famous in the sixteenth and seventeenth centuries for the making of violins. In fact the violin acquired its present shape and its highest quality of excellence at Cremona. Among the noted makers were Stradivarius and Amati, the latter being the name of a family rather than an individual. A genuine old "Cremona" is exceedingly valuable on account of its rarity, and commands a high price. The modern city has a population of 30,000 people and is the seat of considerable local trade. It boasts one of the finest towers in Italy, nearly 400 feet in height, commanding an extensive view of the fertile plains of the Po. There are manufactures of silk, earthenware, and of mustard. See VIOLIN.

Creole, krē′ōl, in Louisiana, a name applied to pure white people born in this country, but of French ancestry. The term is also applied, but less frequently, to those of Spanish blood. They are distinguished as French creoles and Spanish creoles. In a country where there are many people of mixed blood, the term is one of honor, conferring social standing. In the West Indies the creole is one of pure Spanish ancestry, as distinguished from the people of mixed blood and immigrants from other European countries. The term is also applied, but improperly, to a negro born in this country, as distinguished from those imported from Africa. Taken without modification, a Louisiana creole is a person of pure French ancestry born in this country. The traditions, aristocratic customs, and family pride of genuine creole society are well described by G. W. Cable in his *Old Creole Days, The Grandissimes, The Creoles of Louisiana,* and other volumes.

Creole State. See LOUISIANA.

Creosote, krē′ō-sōt, a substance having the general appearance and qualities of carbolic acid. Creosote was prepared first from coal tar by repeated treatment with potash and acids, followed by distillation. It rises from the tar at a high temperature, 400° to 760° F. It is obtained also by the destructive distillation of wood. Pure creosote is an oily, heavy, colorless liquid. It refracts light powerfully. It has a sweet, burning taste and smells like a smoked ham. The word is from the Greek meaning flesh preserver. It is one of the strongest preservative agents known. Meat dipped in a one per cent solution of creosote is safer from spoiling than if smoked.

Creosote water is used in medicine. It stimulates digestion and kills bacteria in the intestines. Creosote vapor is inhaled with helpful effect by consumptives, and by patients afflicted with bronchitis. Severe cases of nausea are sometimes relieved by creosote. Though less dangerous than carbolic acid, creosote should be used as a remedy only under competent advice. Creosote is added to whiskey to give the desired flavor of reeking peat, much as though the whiskey had been distilled over a smoking peat fire.

Creosote is an excellent preservative of wood. By killing germs of decay it prevents dry rot; posts dipped in hot creosote last longer. In this respect the action is like that of tar. Owing to the advancing price of railroad ties treatment with creosote has been employed with excellent results. The life of a wooden pavement may be tripled by the use of creosote. The blocks are placed in a cylindrical steel drum; the air is first exhausted by an air-pump causing the vapors of the wood to pass off by expansion; creosote oil, boiling hot, is then introduced. By tumbling the blocks awhile in the drum, they are so impregnated with creosote that they become practically rot-proof. It is claimed that a pavement of creosoted blocks, well laid in boiling tar and gravel on a concrete foundation, will outwear and outlast several ordinary wooden pavements. The treatment of ties is not essentially different.

Crepe Lisse, krāp lees, a thin, gauzy silk fabric, plain woven, and stiffened in finishing with sizing. Sometimes it is crimped to imitate real crape. It is used for ruchings, trimmings, and millinery purposes.

Crepon, krā-por′, a name signifying coarse crape, applied to several articles of worsted fabrics made in imitation of real

crape. The crinkled effect of crêpon is produced by the Jacquard loom. Two sets of warp threads are used, the one having greater tension than the other. The lower set, which is sometimes of cotton, forms the foundation of the fabric. The upper set forms the face and is of silk, wool, or mohair. The Jacquard loom is so arranged that certain warp threads are skipped in the weaving to form a pattern. The varied effects produced are described as pebbled, cockled, dimpled, soufflé, brocaded, blistered, etc. The fabric is dyed and finished with as little stretching as possible, that the crinkle effect may not be lessened. The material is sometimes silk striped, sometimes embroidered with silk on the Swiss embroidery machine. Crêpons are classed frequently as "novelty goods." Cotton crêpon is woven of yarns which have been mercerized and then protected by gum or some gelatinous substance from the action of caustic soda. These yarns are used in combination with others not so protected. The fabric is then treated with a solution of caustic soda which shrinks the unprotected yarns, producing a crinkled effect. See MERCERIZING.

Crescent, the moon in its first quarter, —the new moon. The word is Latin, meaning increasing, and has no reference to shape. It was applied to the new moon as growing, increasing; but the name has been transferred from the growth to the curved shape, the thick body, and tapering horns of the young moon, and, inappropriately, to the last quarter, when the lighted portion of the moon is indeed sickle shaped, but is waning instead of waxing. The Egyptian and the Greek worshipers of the moon decorated their goddesses, Isis and Silene, with the crescent. Athenian citizens of illustrious birth were permitted to wear crescents of silver and ivory on their buskins as insignia of rank. The patricians of Rome claimed a similar privilege. The crescent was adopted by the Roman empire as the symbol of growing power and eternal dominion. The crescent was favored in the eastern cities, as at Byzantium, possibly by way of distinction from the Roman eagle, the military emblem particularly of Rome and the western empire. The Turks appear to have adopted the crescent after they took Constantinople. Since that date the crescent has been the emblem of Islam, as the cross is the emblem of Christianity. New Orleans, built around a bend of the Mississippi river, is on that account called "The Crescent City."

Crescent City, a popular name for the city of New Orleans.

Crete, krēt, the most important island in the Greek Empire. The inhabitants are chiefly Greeks. It is situated in the eastern Mediterranean, eighty-one miles south of Greece. It is 160 miles long and from 7 to 35 miles broad. Area, 3,326 square miles. The highest peak attains 8,060 feet in altitude. It is a country of valleys and springs, luxurious vegetation, and a mild climate. The present inhabitants are engaged largely in the raising of goats and in producing olives, olive oil, soap, wool, fish, figs, acorns, wine, wheat, oranges, lemons, silk, and honey. The ordinary yield of olive oil is 10,000,000 gallons. In 1821 Crete rose with the rest of the Greeks, but did not obtain independence. In 1868 and again in 1896, there were uprisings. Crete had been in an uproar for seventy years. Great Britain, Russia, France, and Italy intervened; as a result of which semi-independence was granted the Cretans. They were tributary nominally to Turkey, but they had a national assembly and a regular constitution. In 1908 Crete took advantage of the disturbance in Turkey and proclaimed a union with Greece. The four powers intervened again, however. A combined fleet required the Cretans to haul down the Greek flag.

Agitation for annexation to Greece continued, however, and in October, 1912, Cretan deputies were admitted to the Greek parliament, and in November, 1913, Crete was formally annexed to Greece. This was soon after recognized by the Powers.

The population of Crete in 1911 was 342,151. Of these about seven-eighths were members of the Greek Church. The rest of the people, with the exception of a few Jews and foreigners, are Mohammedans. There are about 3,500 Greek churches and chapels and about fifty-fi

Mohammedan mosques. All of the inhabitants of the island speak Greek. Canea, the capital, had in 1911 about 25,000 inhabitants.

In Greek mythology, Crete is the alleged scene of many of the adventures of the gods and heroes. Saturn reigned here. Minos, who built the fabled labyrinth, dwelt in Crete. The ancient world derived its supply of chalk from Crete, whence the name Cretan earth.

Creusa, cre-u'sa. See AENEAS.

Cricket, an insect closely related to the grasshopper and locust. The old English name is grig, whence the proverbial expression, "as merry as a grig." The back is flat. The wing covers bend squarely down over the sides of the abdomen. The antennae are long. "Black, glossy crickets," says Holmes, "with their long filaments sticking out like whips of four-horse stage coaches." The characteristic noise or chirp is made by the male by raising his wing covers and rasping one on the other. An examination of a male cricket shows that ridges and rasping edges, used like a fiddle and bow, are admirably and ingeniously adapted to produce chirps at the player's pleasure. Crickets, like grasshoppers, lay their eggs in pockets in the earth to hatch the following spring. In grain-producing regions crickets sometimes infest grain shocks and do not a little damage, especially by way of cutting bands. They get into clothing also, and cut holes. If a coat be left on the stubble over night, it is likely to be riddled. Crickets have an active, cheerful way that has made them a place in literature and in the regard of households, well expressed in Dickens' *Cricket on the Hearth.* The following is a more juvenile view:

Old Dame Cricket,
Down in a thicket,
Brought up her children nine—
Queer little chaps,
In glossy black caps
And brown little suits so fine.

In olden times the Florentines kept crickets in cages for good luck. The custom still prevails, it is said, in some parts of Japan. See CICADA; GRASSHOPPER; LOCUST; KATYDID.

Cricket, the national ball game of England. The term is probably related to "crooked," in reference to the shape of the crooked hockey-like bats with which the game was formerly played. The regular match game is played by two elevens. At one time a game of the village green and of the school, cricket has become as professional as baseball in this country. Games are played by clubs in circuits, with immense crowds in attendance. As compared with baseball the game is played with two wickets instead of four bases. The pitcher is called a bowler. The bowler aims to knock down the wicket behind the batsman. A run is made from a wicket to the bowler's crease in front of the other wicket. Thomas Hughes' *Tom Brown at Rugby* gives a stirring picture of a cricket match. American boys consider the game a trifle tame in comparison with baseball. See BASEBALL.

Crime, an act or an omission punishable by law. An offense, however repugnant to a sense of right and wrong, is not a crime until the law makes it so. In the full legal sense a crime is any offense against the law; but violations of local ordinances, subject to fines only, are not regarded usually as crimes. A capital crime is a crime punishable by death. Murder, piracy, and treason are the capital crimes of most governments. Crimes punishable by death and those punishable by imprisonment in a penitentiary are ordinarily called felonies. Offenses below the rank of felonies are known as misdemeanors. High crimes are felonies; petty crimes are misdemeanors. See CAPITAL PUNISHMENT.

Crimea, krī-mē'a, a peninsula of southwestern Russia included between the Black Sea and the Sea of Āzov. It contains an area of 10,000 square miles, with varying surface features from steppes to mountains. The steppes are, for the greater part, pasture land. The southern slopes of the mountains produce grapes, olives, and mulberries. The northern slopes produce orchard fruits or grain. The metropolis and seaport is Sebastopol, with a population of 54,000.

The peninsula is noted as the seat of the Crimean War of 1853-6. In pursuance of

designs on Turkey, including the control of Constantinople and the Bosporus, the Russians fortified the heights of Sebastopol, converting the port into a fortress second among Mediterranean towns to Gibraltar only. In 1852 Russia deemed the time propitious to make demands on the Porte, this time for the right to protect Christians within the Turkish dominions. The demand was refused. The Russians advanced on Constantinople. The English and French, sinking national antipathy, hastened, not so much to defend the Turks, as to drive back the Russians. Joined by Sardinia, eager for a seat at the council board of nations, the allies dispatched a force of soldiers and a fleet far surpassing the famous Spanish Armada. The Crimea was invaded September, 1854. The famous battles of Alma, Balaklava, and Inkerman were fought. The Russian defense of Sebastopol is comparable with that of Port Arthur in the Russian-Japanese war. Not until September 8th of the following year did "the flags of the Allies wave from the tower of Malakoff." For the famous charge of the Light Brigade, see BALAKLAVA.

In the treaty of peace that followed, Russia was forbidden the use of war ships on the Black Sea. The passage of war ships through the straits of Dardanelles was also forbidden.

In the Great War, Crimea was overrun by the Germans after the collapse of Russia. Following this misfortune it was subject to Bolshevist misrule, from which, in 1919 and 1920, it tried to become free.

Criminal Law. See LAW.

Crinoline, crĭn′ō-lĭn, a stiff lining fabric composed of horsehair and linen. The name is derived from the Latin words *crines,* hair, and *linum,* flax. The so-called crinoline of the present day is made frequently of coarse cotton yarns. In finishing, the fabric is heavily sized to take the place of the natural stiffness of the horsehair fabric. Crinoline was first used about the middle of the nineteenth century to stiffen women's skirts. When the fashion of expanding the skirts grew to the exaggeration that demanded hoops or hoop skirts, the word crinoline was retained in the phrase "wearing crinolines," which implied the wearing of hoops.

Crispi, kres′pe, **Francesco** (1819-1901), an Italian statesman. He was born at Ribera, Sicily. He studied law at the University of Palermo and began the practice of his profession at Naples, 1846. At the outbreak of the Sicilian revolution he became active in guiding the insurrection and upon the restoration of the Bourbons was obliged to flee from Sicily. Continuing to conspire for the redemption of Italy he was driven in succession from Piedmont, Malta and Paris, at last joining Mazzini in London. In 1859 he returned to Italy, declaring himself openly a Republican and in favor of national unity. In the insurrection of 1860 Crispi served as mayor under Garibaldi and the following year was returned by Palermo to the first Italian parliament. In 1876 he became president of the Chamber of Deputies, minister of the interior in 1877, and prime minister in 1887, filling the latter office till 1891, and again 1893-1897. Crispi favored the triple alliance of Italy, Germany and Austria, and formed warm friendships with Bismarck and Gladstone. His popularity in Italy suffered by his support of the Triple Alliance and by reason of his measures regarding taxation. Two attempts were made to assassinate him. His political enemies brought charges against him which, although he was acquitted, injured him in the eyes of the people. In spite of this he was re-elected to Parliament in 1898 by an immense majority. He was now an old man and growing blind. An operation restored his sight, but his general health failed and he was obliged to give up his political activity. Crispi was remarkable for his intense patriotism, his earnestness in working for reform and his ability to arouse his fellow men to a realization of the needs of the times and of their duty as citizens.

Crispin, a Roman martyr of noble family. Obliged to flee from Rome during the persecutions of Diocletian, Crispin maintained himself in what is now Soissons, France, by making shoes. He was so charitable, the legend runs, that he even stole leather to make shoes for the poor.

He suffered martyrdom in 287. October 25th is St. Crispin's day. He is the patron saint of shoemakers, who are jocularly called knights of St. Crispin.

Crittenden, John J. (1787-1863), an American lawyer and legislator, to whose influence is due the fact that Kentucky remained loyal to the Union during the Civil War. He was born at Versailles, Kentucky. His education was received at William and Mary College from which he graduated at the age of twenty, immediately beginning the study of law. He served in the War of 1812, in 1816 was made a member of the state legislature and in 1817 was elected to the United States Senate. He resigned in three years, but was re-elected in 1835, again in 1842, and still again in 1855. From 1848 to 1850 he was governor of Kentucky. He had been a Democrat, but favored Henry Clay and became a "Henry Clay Whig." In 1860 he joined the Constitutional Union party and it was he who proposed the famous Crittenden Compromise, the best known of the various plans suggested just before the Civil War for bringing about a compromise between the North and South.

Crochet, crō-shā′, a variety of hand knitting. It is produced by drawing yarn into loops or meshes with a long, slender needle of steel, bone, or ivory, hooked at one end. Crochet work is known to have been in use as early as the fourteenth century. Crocheting may be done with fine cotton, linen, or silk thread, producing even and delicate laces. It may also be done with heavy cord, rope silk, or yarns of eight strands, such as double zephyr. A great variety of articles is produced from these different materials. From thread are made laces, trimmings, doilies, collars and cuffs, infants' caps, etc. From heavy silks and yarns are made mittens, gloves, shawls, vests, jackets, scarfs, undergarments, hoods, caps, leggings, etc. The work is easier on the hands and more rapid than knitting. After learning a variety of stitches, an article of almost any shape can be produced; or an article that is seen may be readily imitated. A machine has been made for crocheting the common shell stitch pattern. It produces an edging used for finishing knitted underwear and a great variety of small articles.

Crockett, David (1786-1836), an American pioneer and politician. He was born at Limestone, Tennessee, August 17, 1786. He was killed at the defense of the Alamo at San Antonio, Texas, March 6, 1836. He was a member of Congress from Tennessee from 1827-33, and held a command in the Texan War of 1835-6. He was famous among frontiersmen as an unfailing shot. Allusions to Crockett's coon have their origin in a story that found its way to the halls of Congress. Having treed a coon one day, Crockett was about to take aim, when the coon called out, "Don't shoot, Colonel, I'll come down; I'm a gone coon." See ALAMO.

Crockett, Samuel Rutherford (1862-1914), a Scottish novelist. He was educated at Edinburgh and Oxford, and entered the ministry of the Free Church of Scotland. He was pastor of Penicuik for some years, but finally abandoned the ministry for literature. His first novel was *The Stickit Minister.* Other well known stories are *The Lilac Sunbonnet, The Men of the Moss Hags, The Red Axe, The Black Douglas, The Firebrand, The Silver Skull, Kit Kennedy,* and *Joan of the Sword Hand.*

Crocodile, krŏk′ō-dīl, a huge lizard-shaped reptilian, chiefly of Egypt and India. The crocodile is exceeded in size by but four animals. It is the largest of all animals hatched from an egg. It attains a length of from ten to twenty feet. Its enormous jaws are armed with sixty-eight formidable teeth. The largest teeth of the lower jaw fit into cavities in the upper jaw; and the largest teeth of the upper jaw fit into corresponding cavities of the lower jaw. The jaws close with a sort of lock which enables the crocodile to hang on to its prey with its entire weight. The back is covered with bony plates set in a thick, leathery skin. So far as they go the plates furnish an armor which it is difficult to pierce with an ordinary bullet or weapon, but the skin between the plates is vulnerable. The animal cannot turn quickly, but it has a long tail flattened sidewise with which it can strike terrific

1. Caiman, Central and South America. 2. Crocodile, Nile River. 3. Salt Water Crocodile, Malaysia. 4. Gavial, Ganges River.

CROCODILES.

blows and knock its prey around in reach of its mouth. The crocodile hunts its food around the margins of rivers and ponds, keeping all but the upper part of its head under water. It sinks when alarmed and can stay under the water for an hour and a half at a time. It swims with the tail, not with the feet. The chief food of the crocodile is fish. Large prey is hidden in a water hole and later dragged ashore to be eaten. The eggs, thirty to sixty, somewhat smaller than those of a goose, are deposited in a low heap of muck on the hot sand, and left for the sun to hatch, though it is said that the female defends the nest and scratches off the sand to liberate her young.

The crocodile of the Nile was held in reverence by the natives. Crocodile worship rose to such an extreme that sacred crocodiles were kept in temples, adorned with jewelry, led in religious processions, and mummified when dead. The crocodiles of the Ganges were also protected by idolatrous ideas and grew exceedingly bold and dangerous, especially as they had acquired a shark's appetite for human victims.

The crocodile is distributed more widely than was supposed. In 1875 genuine crocodiles fourteen feet long were discovered in Florida. The scales are ridged more sharply and the shout is narrower than in the case of the alligator. Their habits and haunts are much the same. In addition to two gavials of northern India and Borneo, and five caimans of the Amazon region, there are no less than ten genuine crocodiles. They are found in Florida, Central America, Cuba, Australia, and Malaysia, also in the Orinoco, the Niger, the Congo, the Nile, and the Ganges Rivers respectively.

The crocodile of the menageries is caught napping on the sand. A dozen half naked Africans armed with clubs fight him away from the water's edge until a lucky blow half stuns him. Then they pile on, bind his jaws together with a rope, tie his feet to his body, and lash him to a stiff pole. The trapper then floats him down the river and puts him into a cage ready for shipment—probably to Hamburg.

Crocus, a genus of plants belonging to the iris or flag family. The word is the Greek name for saffron. In fact the saffron of commerce is the pollen of the common crocus of the Mediterranean regions. About thirty species of the crocus are known to the American florist. Bulbs planted in the fall beneath the shelter of rich litter send up large flowers of many colors in early spring. Holmes speaks of

> The spendthrift crocus, bursting through the mold,
> Naked and shivering with his crop of gold.

Croesus, krē'sus (560 B. C.), the last king of Lydia in Asia Minor. He extended the limits of his father's kingdom. From tribute mines and the sands of a local mountain stream, the Pactolus, he accumulated so much gold that "as rich as Croesus" became a proverbial expression. In his prosperity he deemed himself the happiest of mortals; but Solon, the wise Greek, denied him the title, saying no man could be sure of happiness during his lifetime. Surely enough, misfortune overtook him. His favorite son was killed, and Cyrus, the Persian, took away his wealth and his dominion.

Cromlech, krŏm'lĕk, an ancient Celtic place of burial. It consists essentially of three or more upright stones supporting an unhewn slab beneath which sepulchral remains are found. Very frequently the cromlech shelters a burial urn or chamber, lined with stones and containing a skeleton, with weapons, pottery, and other indications that the dead were persons of rank. These sepulchers are commonest in the territory last occupied by the Celts, as Ireland, Scotland, Wales, Cornwall, Devonshire, and Brittany; but they are found throughout England and many localities of the continent. Sometimes a slab is no larger than two persons may lift. Many are very heavy, however. That of a celebrated cromlech in Cornwall is calculated to weigh twenty tons; the capstone of one in Wales is 12 feet long, 10 feet wide, and 4 feet thick; one near Dublin, resting on 6 blocks, is 23 feet long, 17 feet wide, and 6 feet thick; the Witches' Stone in the vicinity of Edinburgh is about 10 feet wide and 12 feet in length.

Crompton, Samuel (1753-1827), an English spinner and weaver; the inventor of the spinning-mule. Crompton was born at Firwood, near Bolton, Lancashire. His parents were poor and, like other farmers in that vicinity, eked out a scanty living by spinning and weaving. The father died while the children were still young. His widow struggled hard to educate her children, and young Crompton put forth every effort to obtain a mathematical education. Finding himself hindered in weaving by the difficulty of getting suitable yarn, he set to work to invent some machine by which better yarn could be spun and greater quantities produced than by the Hargreaves jenny. For five years Crompton labored, almost literally night and day, and spent every cent he could spare to carry out his project. The machine which he finally constructed produced such fine yarn that his house was beset by people wishing to discover his secret. It is said that ladders were placed against his windows in the effort to obtain a sight of his machine. Crompton could not afford to take out a patent. At last, under the written promise of a liberal subscription, he disclosed his invention to certain manufacturers. He received in return less than $300. He set to work bravely, however, to build up a manufacturing business. Years afterward, near the close of a toilsome life, he received from Parliament a reward of $25,000 which was entirely inadequate to the needs of his manufactory. The importance of Crompton's invention cannot be overestimated. The Hargreaves jenny and the Arkwright roller frame made possible the Crompton spinning-mule, but it at once superseded the earlier machines. Thirty years after Crompton brought out his machine there were twelve times as many in use as there were Arkwright frames, while the Hargreaves jenny was left still farther in the rear. See SPINNING; HARGREAVES; ARKWRIGHT.

Cromwell, Oliver (1599-1658), lord protector of Great Britain and Ireland. Born at Huntington, April 25, 1599; died in London, September 3, 1658. The Cromwell line of knights dated from the reign of Queen Elizabeth. Oliver's mother could trace her descent back to Alexander, lord steward—or Stuart as the name came to be written—the founder of the family on the throne of England. Cromwell married a daughter of a landed proprietor who prefixed Sir to his name so that he was, we may say, well connected on all sides.

Cromwell appeared in Parliament in 1628. Although clad in slouchy, rustic dress, he had had a year at Cambridge. He proved to be a man of rude, ready, impressive eloquence, a determined friend of fair play. He was a zealous advocate of freedom in religious matters—opposed to the idea of a state church. He at once became prominent and influential. At the close of the term for which he was first elected he retired to a farm at Ely which he had inherited. He came to be known as a god-fearing, earnest, just man—a raiser of cattle.

A thoroughly characteristic anecdote is told of his fairness in neighborhood matters. Some enterprising speculators formed a plan to drain the fertile fens and swamps near Ely, in order to convert them to their own use. Cromwell withstood the projectors so stoutly as to defeat the scheme. His poorer neighbors whose rights of pasturage he thus upheld had unbounded confidence in him and dubbed him the "lord of the fens." Later, when troublous times broke out, these same neighbors followed him through thick and thin. No matter what odds were opposed, no matter how deeply he might charge into the ranks of the enemy, these old Ironsides, as his regiment came to be called, were at his back, laying on lusty blows for country, for God, and for Oliver. Cromwell was one of the greatest leaders of men the world has seen. His influence sprang from the very fens of his native shire. Leadership of men begins at home.

He was a member of the several Parliaments that were summoned and sent home by the king. When bitterness, springing from the broken promises of the king and religious factions, rose so high that actual hostilities broke out between the royalists and the adherents of Parliament, Cromwell formed the famous troop of cavalrymen to which we have referred and

took the field. He was without doubt a military genius. Practically without military experience until he had reached the age of forty, he transformed raw recruits into the most formidable body of soldiers in Europe. Like Joab of old he never lost a battle. His first exploit was the capture of military supplies at Cambridge in 1642. Marston Moor, Naseby, and a score of victories followed. Cromwell and his "praying, snivelling, long-faced troop," ever in the thick of the fight, hewed down the "sons of sin—the children of the harlot that sits on seven hills."

Cromwell rose higher and higher in command, until he became the embodiment of the Puritan cause. King Charles I was driven into Scotland, brought back, and beheaded on the charge of breaking his word with Parliament. Cromwell's signature stood third on the death warrant. Ireland was quickly wrested from the royalists. Charles II raised the Stuart banner in Scotland, but was defeated at Dunbar, Stirling, and Worcester. December 12, 1653, Parliament, now subservient to Cromwell, proclaimed him lord protector —a sort of president—of the Commonwealth.

Cromwell pursued a vigorous policy at home and on the sea. He was the leading man in Europe—a sort of Bismarck among crowned heads. Without increasing taxes, he caused public business to be managed honestly. Judges were appointed to do justice to all classes of people. He lived at Hampton Court a few miles up the Thames, but, as it happened, died at Whitehall Palace in London. He was buried in the beautiful chapel of King Henry VII in Westminster Abbey. He was succeeded for a few months by his son Richard, a weak man.

In 1659 the same Charles who was routed at Dunbar was restored to the throne of his father as Charles II. One of his first acts was to order the body of Cromwell taken up and hanged at Tyburn. The body was afterward buried beneath the gallows. The head was cut off, fixed on a pole, and set up at Westminster.

In early manhood, Cromwell, Pym, and others, who afterward became famous in the councils of the Parliamentary party cherished for a time the project of joining the Puritan colonies in New England. During Cromwell's term of influence the immigration to the American colonies largely ceased, because the persecutions of the Puritans ceased.

Croix de Guerre. See WAR, THE GREAT.

The worst stain on Cromwell's memory is his cruel, not to say brutal, treatment of Ireland. Under his direction the Catholic Irish adherents of the Stuarts were butchered with a degree of ferocity worthy of Indian warfare.

See CHARLES II; COMMONWEALTH.

Cronus, or **Kronos,** krō′nŭs, in Greek mythology, one of the Titans, son of Uranus (Sky) and Gaea or Ge (Earth). Cronus married his sister Rhea and reigned in Olympus during the Golden Age. Then Zeus, the son of Cronus, led a rebellion against his father and the Titans, and Zeus was victorious; the Titans were driven into Tartarus and punished in various ways. Zeus now reigned in Olympus. Cronus was sometimes called the god of time. This idea seems to have arisen from the similarity between the words Cronus and Chronos, time. According to later authorities, the word Cronus is from an entirely different root. See SATURN; MYTHOLOGY; GOLDEN AGE; HESIOD.

Crook, George (1828-1890), an Indian fighter. He completed the West Point course in 1852, and served with gallantry at South Mountain, Antietam, and Chickamauga. He was with Grant at Appomattox. After the Civil War he rose to the rank of major-general, and was commander of the United States forces in Idaho, Arizona, and the department of the Missouri. He rode in many a hard campaign against the Apaches, Comanches, and Sioux. He died at Chicago. See MILES; APACHE; CUSTER.

Crookes, William, an English electrician and chemist. He was born in London June 17, 1832. He was educated at Oxford. At thirty-one he was a fellow of the Royal Society. In 1897 he was knighted for brilliant discoveries in physics. He is the author of a number of practical

works pertaining to the manufacture of beet root sugar, dyeing, the sewage question, etc. He is best known, however, as the inventor of Crookes' tubes. They are sealed glass bulbs or tubes from which the air has been exhausted to a high degree of rarefaction. Sir William Crookes discovered that by passing electrical currents through these tubes they were lighted up brilliantly with green, pink, and many other colors, highly suggestive of the northern lights. See X RAYS.

Croquet, kro-kā′, a lawn game played with mallets, balls, stakes, and wickets. A stake is driven at each end of the ground. Nine wickets are driven, five in a central row leading from post to post, and two others on each side. The game may be played by two persons. Each player is allowed to strike his ball once with the mallet, driving it along a line which makes the round of the wickets. If it pass through a wicket, he is entitled to play again, or if his ball strike that of an opponent, he is entitled to place his ball by the side of it and strike his own ball. This he aims to do in such a manner that his opponent's ball is rolled out of position, while his own comes in front of a wicket. He is then entitled to another play for his wicket, which won, he may again, if not in place, play his opponent's ball and thus continue. It is not at all impossible for a skillful player, with the aid of his opponent's ball, to make the entire round and strike his home post without giving his opponent an opportunity to stop his progress. Four can play to a still better advantage by pairing off. Those who play together assist each other. When a player cannot make a wicket he aims to leave his ball where it may be played upon by his partner; and likewise, when one player gets possession of his partner's ball, he aims by a split shot to throw it into position for a wicket and yet leave his own in an advantageous position. The game is in some respects like that of billiards. It calls for a firm wrist and a true eye. See PALL MALL.

Cross, an ancient gibbet, consisting essentially of an upright piece and a cross-piece. It preceded the modern gallows, and was in common use among the Romans at the time of the crucifixion of Christ. There are several forms. The Latin cross, or the cross of the crucifixion, consisted of a long upright beam, crossed by a transverse beam near the top. St. Andrew's cross has the form of an X. St. Anthony's cross has the form of the letter T. The Greek cross is like the Latin cross except that the four arms are of equal length. The Maltese cross consists of four triangular arms with their points to the center. Cathedrals are built in the form of a Latin or a Greek cross. The top, or choir, points invariably toward the east. The cross is the emblem of sorrow, suffering, and burden bearing. A crucifix is a cross bearing an effigy of Christ. It took the place of the plain cross about the eighth or ninth century. It is used above the altar in the Greek, the Roman, and in some Lutheran churches. See CRESCENT.

Cross, Mrs. Mary Ann Evans (1819-1880), an English novelist, best known by her pen name of George Eliot. She was born in a "small, low-roofed farmhouse" in Warwickshire, only thirty miles from Shakespeare's home at Stratford. Her mother was a woman of intelligence and force of character. Her father, Robert Evans, who had learned the trade of carpenter and builder, was a surveyor, as well as a farmer; and was land agent also to Sir Roger Newgate. He was a high-minded sort of man, whose practical judgment and experience won him a reputation throughout a wide neighborhood. Marian, as she was called among her friends, was the youngest child. Soon after her birth the family removed to a larger home, Griff House, on the same property. This was the family residence for twenty years. Marian was sent to a nearby boarding school at an early age, and at thirteen to another school at Coventry. She was a reader from her earliest childhood, but was not particularly fond of her lessons, until she reached the age of twelve, when she developed a desire for knowledge and a marked ability in its acquisition. At Coventry she came under religious influ-

ences which tended to deepen her natural seriousness and conscientiousness.

When she was sixteen Marian's mother died, and she became her father's housekeeper. We might expect to find in the future novelist a dreamy, unpractical sort of girl, who would prove an indifferent housekeeper. On the contrary, she was neat, quick, and energetic—a good cook and a skillful needlewoman. Household duties did not hinder her from continuing her studies. This she was able to do more satisfactorily when, in 1841, her brother brought a wife to the old house, and father and daughter took up their abode in a new home near Coventry. Here she had several tutors. Her favorite studies were music and foreign languages, including French, German, Italian, Greek, and Latin. Hebrew she studied alone. Her reading covered a wide field.

Marian became intimate about this time with Charles Bray, his wife, Caroline Hennell, and her brother, Charles Hennell. These people were freethinkers, and were influential in leading Miss Evans to a decided change in her religious views. Strauss, a German theologian, completed the work these friends had begun. Miss Evans was occupied for two years in translating his *Life of Jesus* into English. In this work Strauss attempts to prove that the narratives of the New Testament are almost wholly mythical. In 1849 Mr. Evans died. Marian went abroad for a time and, on her return, visited London, living as a boarder in the house of John Chapman, editor of the *Westminster Review*. This association led to her accepting a position as assistant to Mr. Chapman, with which her literary career really began. Her special work for some time consisted of reviews of contemporary literature.

Miss Evans was at this time a delightful companion. She was musical, playing more than tolerably well; she was a charming conversationalist; and she was the most learned woman in England. Among other literary persons, she became acquainted with George H. Lewes. Her affiliation with him has been regarded as the one doubtful step in her life. It is but just to state that no one questions Miss Evans' conscientiousness. Mr. Lewes had been deserted by his wife. The technicalities of the English law made a divorce impossible. Miss Evans went to live with him, and, until his death, remained his faithful wife, and a loyal and devoted mother to his deserted children. Whatever may be said of the abstract morality of this step, two effects must be noted. It has injured her influence which, in every other respect, has been on the side of the highest type of morality. On the other hand, Mr. Lewes' influence on her literary career was most beneficial; so much so, in fact, that it is questionable whether, without it, her greatest work would have been produced.

Her first writing in the line of fiction was at his suggestion. *The Sad Fortunes of the Reverend Amos Barton,* the first story in her *Scenes of Clerical Life,* was sent to *Blackwood's Magazine* over the pseudonym of George Eliot, by which name the author was destined to be known henceforth. The other stories in the series soon followed. In 1859 *Adam Bede* was published. This work at once placed George Eliot's name with those of England's greatest novelists, Dickens and Thackeray. Other novels were produced in rapid succession. A complete list of her writings is as follows:

Life of Jesus (translation), 1846.
Essence of Christianity (translation), 1854
Scenes of Clerical Life, January, 1858.
Adam Bede, February 1, 1859.
The Mill on the Floss, April 4, 1860.
The Lifted Veil, 1860.
Silas Marner, March, 1861.
Romola, 1863.
Felix Holt, 1866.
The Spanish Gypsy (dramatic poem), 1868.
Address to Workmen, 1868.
Agatha, 1869.
How Lisa Loved the King, 1869.
Middlemarch, 1871-2.
The Legend of Jubal, and other poems, May, 1874.
Daniel Deronda, 1876.
The Impressions of Theophrastus Such, 1879.

The identity of George Eliot had been kept a secret from the reading public, and even from the editor of *Blackwood's,* until after the publication of *Adam Bede.* The credit of the stories being given to another, who was either unable or unwilling to set people right in the matter,

made it necessary for the author to disclose herself. In 1878 Mr. Lewes died. A year and a half later, Mrs. Lewes married John Walter Cross, a London banker some twenty years her junior. Her death occurred quite suddenly in 1880.

George Eliot's life was externally quiet and uneventful. Her inner life, we can scarcely doubt, was sufficiently exciting. Life itself was a serious matter with her. Her views of life, her religion, her friendships, her human relations,—all stirred her profoundly. Personally, she was a rather small, homely woman, with a large, strong-featured, yet gentle face. Frederick Myers speaks of "her grave, majestic countenance." She was quiet, almost timid in bearing, with a refined, sympathetic voice, a quickness and clearness of thought, and a gift of expression which made her society unusually fascinating. She was by nature of a religious temperament; but so logical of mind that faith without sight was almost an impossibility. Reared in the Church of England, she was converted, at the age when most susceptible to religious impressions, to the views of the "Dissenters," as the Methodists and Baptists were called. Conscientious in her views to an extreme, but coming under the influence of skepticism before her character was formed or her intellectual powers fully developed, it would seem that the agnostic views to which she adhered throughout life were inevitable. She showed, however, a profound respect for all religious feeling and belief in others. No other writer of fiction has treated religion with greater respect, delicacy, and appreciation of truth in different forms. In *Adam Bede,* Methodism; in *Romola,* Catholicism; in *Daniel Deronda,* Judaism—in all she makes clear that to her the religious emotion,—not the religious creed,—is the real and vital truth.

Mr. Cross, her husband and biographer, says of her that "she showed from her earliest years the trait that was most marked in her through life,—namely the absolute need of some one person who should be all in all to her, and to whom she should be all in all." Knowing this trait of her nature, her life story is made clearer. In her earliest childhood she had her brother Isaac. The story of the childhood of Tom and Maggie Tulliver in *The Mill on the Floss* is said to be a true picture of the early years of Isaac and Marian Evans. Then she had her father. Just before his death she wrote, "What shall I be without my father? It will seem as if a part of my moral nature were gone." Again she leaned upon Mr. Lewes and found in him the human sympathy and support she craved. Her marriage to Mr. Cross so soon after her first husband's death came as a shock to many of her friends. But her nature demanded this human companionship and would not be denied.

In intellectual power George Eliot is often regarded as masculine, so virile were her reasoning faculties; so vigorous and free from prejudice her judgments; so philosophic the general trend of her thought. In character she was essentially feminine, affectionate, proud, sensitive; easily moved to tears or laughter; intense in her enjoyments and sorrows. To this union of the masculine and feminine is due much of her power as a writer of fiction.

George Eliot's novels are divided usually into two groups. The first four in the list are based on circumstances coming under the author's own observation during her early life in Warwickshire. The other and later novels belong to the second class, and are based upon certain special studies. *Romola,* one of the world's great novels, is a picture of Florentine life during the fifteenth century. The material for *Felix Holt,* which is a claim for political equality, was obtained from files of old newspapers. For *Middlemarch,* a rather tedious picture of life, although literary critics often call it her greatest work, studies were made of medical treatises and medical colleges. In *Daniel Deronda,* a study of Judaism, the treatment accorded the Jew by the Christian furnishes the theme.

There is a diversity of opinion as to which of George Eliot's novels should be regarded as the greatest. *Silas Marner* is the favorite usually with young people. It is the simplest, and yet the most perfect in

execution. *Adam Bede* has attracted, doubtless, the largest number of readers. *Romola, Middlemarch, Daniel Deronda,* —each is defended for first place by a band of admirers.

George Eliot as a novelist is placed frequently ahead of both Dickens and Thackeray. Judged by the standards of the modern critic this is perhaps just. She shows a greater power in the analysis and development of character than either. She is more accurate, and is possessed of wider and more varied culture. Above all, her insight into the spiritual life of men and women surpasses that of any other novelist. Judged, however, by the standards of the average reader of novels, George Eliot's philosophy is too somber, especially in her later novels; her analysis of character becomes too minute,—the story is almost lost in psychological problems. Thackeray is more amusing; Dickens leaves the reader happier. From first to last, however, George Eliot's novels present the highest moral standards. They teach the sovereignty of duty; the rewards of unflagging endeavor; the heroism of commonplace, everyday life, where selfish motives are lost sight of for the universal good.

MARY BLANCHARD MURPHY.

SAYINGS.

It is hard to be wise on an empty stomach.

It's easy finding reasons why other people should be patient.

I've never any pity for conceited people, because I think they carry their comfort about with them.

When Death, the great reconciler, has come, it is never our tenderness that we repent of, but our severity.

Th' young men nooadeys, th're poor squashy things,—the' looks weel enoof, but the' woon't wear, the' woon't wear.

Speculative truth begins to appear but a shadow of individual minds. Agreement between intellects seems unattainable, and we turn to the truth of feeling as the only universal bond of union.

It is never too late to be what you might have been.

My books are deeply serious things to me, and come out of all the painful discipline, all the most hardly learnt lessons of my past life.

The only effect I ardently long to produce by my writings is, that those who read them should be better able to imagine and to feel the pains and the joys of those who differ from themselves in everything but the broad fact of being struggling, erring, human creatures.

O may I join the choir invisible
Of those immortal dead who live again
In minds made better by their presence; live
In pulses stirred to generosity,
In deeds of daring rectitude, in scorn
For miserable aims that end with self,
In thoughts sublime that pierce the night like stars,
And with their mild persistence urge man's search
To vaster issues.

SAID OF GEORGE ELIOT.

Her conversation was deeply sympathetic, but grave and solemn, illumined by happy phrases and by thrilling tenderness, but not by humor. Although her features were heavy and not well proportioned, all was forgotten when that majestic head bent slowly down, and the eyes were lit up with a penetrating and lively gaze. She appeared much greater than her books. Her ability seemed to shrink beside her moral grandeur.—Oscar Browning.

A large intelligence was her dominant characteristic. However keenly she might feel, she could always see more keenly still. She not only had the creative imagination which brought forth these children of her brain; she had the piercing gift of analysis as well. So that more than any other English novelist, when her characters were once born, she had the power of probing to the quick all their secret impulses and springs of action.

In a word, the difference between Dickens's and George Eliot's powers is here typified: Dickens tends toward the satiric or destructive view of the old times; George Eliot, with an even more burning intolerance of the essential evil, takes on the other hand the loving or constructive view. It is for this reason that George Eliot's work, as a whole, is so much finer than some of Dickens's. The great artist never can work in haste, never in malice, never in even the sub-acid, satiric mood of Thackeray: in love, and love only, can great work, work that not only pulls down but builds up, be done; it is love, and love only, that is truly constructive in art.—Sidney Lanier.

George Eliot shows man what he may be, in terms of what he is.—Sidney Lanier.

Crossbill, a bird of the finch or sparrow family. The red or American crossbill is an inhabitant of evergreen forests from the Carolinas northward. The male is of a dull red color, with brown wings and tail. The female is of a dull olive green. The name comes from an apparent deformity of the bill. One tip turns to the right, the other to the left—a peculiar arrangement, which, combined with an

ability to move the tips laterally, enables the bird to spread the scales of pine or other cones in search of the seed within. It is a bird of the north. Its home is in the great coniferous forests. It nests about twenty feet from the ground. There is also a white-winged crossbill, and there are a number of Old World species. See SPARROW.

Cross Buns, small cakes prepared especially for Good Friday. They were appropriately marked with the sign of the cross, hence the name. They were always a popular feature of the English Lent, and some attempt has been made to revive their use in this country. The origin of the practice of serving cross buns is thought to be rooted in some heathen practice long forgotten. Chambers states that at Chelsea there were formerly two celebrated bun houses, besieged on Good Friday, both morning and night, by eager purchasers.

Cross-Fertilization, in botany and horticulture, the fertilization of the ovules of one plant by pollen from another plant. Darwin, the investigator of fertilization, claims that plants raised from cuttings of the same parent, as potato plants raised from parts of the same potato, are practically the same plant, and that true cross-fertilization can be secured only when the pollen and the ovules belong to plants raised from seeds.

In many plants the pistils are ready for pollen before or else after the pollen of the same plant is ready to fall. In this case the pistil may receive pollen brought by the wind from another plant, perhaps miles away. Some flowers are so peculiarly constructed that there is no opportunity for the pollen to come in contact with the pistil. In this case the pistil depends on pollen brought to it by the legs of bees and other insects in search of sweets. In the case of the pea family the anthers so envelop the style of the pistil that cross-fertilization is unlikely to occur. The wind and insects are the chief agencies of cross-fertilization. Plant breeders protect the pistil from wind and insect by paper bags, and powder with pollen from the particular plant desired. Darwin established the principle that seeds obtained by cross-fertilization are more vigorous, and produce stronger plants, than seeds obtained by close-fertilization. There are, of course, exceptions to the rule. He experimented with the common morning glory. He found that cross-fertilization and close-fertilization for one generation gave plants having average heights of 100 and 76 respectively; the fifth generation gave 100 and 75. Seeds produced by ten successive cross-fertilizations, and seeds produced by ten successive close-fertilizations produced plants having heights of 100 and 54 respectively. If the prevailing wind be from the west when pollen is flying, it is evident that a row of corn on the west side of a field must be close-fertilized, or not at all. Under the same wind conditions, the east row has slight chance of close-fertilization; but the silk is likely to catch pollen from tassels growing in rows further west. Windy weather favors cross-fertilization. The skillful corn breeder chooses his seed from rows that are likely to be cross-fertilized.

The beneficial effect of cross-fertilization upon morning glories and corn has been described. On the other hand, close-fertilization or inbreeding is best for some plants. Experiments with tobacco, for instance, have convinced growers that the best seed may be obtained by tying paper bags over the whole flower stalk in such a way as to shut out insects and exclude pollen carried by the wind. Seed obtained in this way is heavier, and produces not only more vigorous, but more uniform plants than seed obtained by miscellaneous cross-fertilization.

Croton Bug. See COCKROACH.

Croup, a name applied to two quite distinct diseases of childhood. True croup, or membranous croup, is in reality diphtheria of the larynx and adjacent parts. It is a dangerous disease and demands the immediate attention of a physician. False croup, the variety which is meant commonly when the word croup is used, is a catarrhal affection of the larynx. It comes on suddenly at night, the child awaking with a harsh, discordant cough accompanied by difficulty in breathing so great as to be terrifying to an onlooker. Unless it is

known that the child is subject to false croup a physician should be called to diagnose the case. If assured that the trouble is nothing more dangerous than common croup, the treatment is simple. If vomiting be induced, relief is almost sure to follow. Breathing steam, as from a pitcher of boiling water, is helpful. In croup as in many other diseases, however, prevention is better than cure. The trouble is a result frequently of exposure to wet and cold, and a child who is kept warm and dry if otherwise healthy will seldom have croup. In case of unavoidable exposure the child for whom croup is feared should be thoroughly warmed before he is put to bed. The entire chest should be bathed in warm water, dried, and thoroughly rubbed with camphorated oil, or some similar ointment. In most cases this will ward off an attack.

Crow blackbird.

Crow, a family of birds which includes the jay and the raven. There are said to be two hundred species. The crow is proverbially black. The common crow nests from Mexico to Hudson Bay, retiring into the southern half of its range in winter. It builds in a tree a bulky nest of twigs, strings, shreds of grapevine, leaves, grasses, and moss, from twenty to thirty feet up. Eggs, four to six, bluish green, often mixed with shades of brown. The crow is nearly twenty inches in length. Were it not for his determination to have all the seed corn when planted, and a heavy rental when the corn is mature, the crow's natural diet of insects, seeds, snails, grubs, and caterpillars would cause the farmer no uneasiness.

The crow is a wary bird. A flock of crows feeds always in charge of a sentinel, at whose warning caw there is no delay in winging to a place of safety. Apparently familiar and bold, the crow learned, generations since, to tell the difference between a man and a man with a gun; yet it is often imposed upon and kept away from a cornfield by a scarecrow hat and an old hay-stuffed coat ingeniously disposed on a pole. It is said that a crow can count as far as three; for if three persons enter a cornfield to lie in wait with guns the crows will remain in distant tree-tops till three persons have gone out again; but that, if the number of persons who enter in a group exceeds three, the crows lose count and approach the corn after three persons have gone away.

The self assured *kaw, kaw, kaw,* of the crow, when it has nothing to fear, is capable of considerable variation; and ingenious argument has been expended to prove that the crows have an intelligible though limited vocabulary. Some claim to have taught crows to talk. When on a journey, or when flying between its roost and feeding ground, the crow takes a straight course; which has passed into the convenient expression of distance measured "as the crow flies." Lowell emphasizes the delights of early summer with a characteristic, "The crows flapped over by twos and threes." In winter the northern crows go south and gather together in large roosts, some of which Mr. Rhoads, writing in the *American Naturalist,* has estimated as containing over 300,000 birds.

A disagreeable habit of devouring the eggs of small birds has left the crow few feathered friends, but it seems to thrive under modern conditions. "I have seen no bird walk the ground with just the same air the crow does. It is not exactly pride; there is no strut or swagger in it, though perhaps just a little condescension; it is the contented, complaisant, and self-possessed gait of a lord over his domains. All these acres are mine, he says, and all these crops; men plow and sow for me, and I stay here or go there, and find life sweet and good wherever I am. The crow is a character I would not willingly miss from the landscape," says Burroughs.

The Florida crow is a smaller southern species of the pine woods. The fish crow is smaller than the common crow and, if there be any difference, blacker. It is no fonder of seashore winter diet than its relatives, but is seldom found far inland. With the exception of black in its wings and tail, the Clark crow is white. It nests in the high pine trees of the Rocky Mountains. British species are the rook, the jackdaw, the carrion crow, and the chough. See JAY.

Crow Blackbird. See BLACKBIRD.

Crow Indians. See DAKOTA.

Crown, a circlet worn on the head as an ornamental mark of honor, or emblem of authority. The Greek crown placed on the head of the victor in the national games consisted of a garland of laurel. The Romans bestowed a number of crowns,—a garland of wild flowers on the general who relieved a beleaguered garrison; a garland of oak leaves and acorns on him who saved the life of a Roman citizen in battle; and a golden band surmounted by miniature turrets on the first to scale the walls of the enemy. The Roman bride wore a garland of flowers of her own plucking and weaving.

The crown of authority of sovereignty is supposed to be derived from the diadem of the Persians. Alexander the Great wore a crown. Charlemagne was crowned with the iron crown of the Lombards. His imperial crown of heavy, pure gold, adorned with hundreds of large, uncut precious gems, and ornamented with inscriptions and enamels, is kept at Vienna. The triple crown of the pope is called his tiara. The royal crown of Great Britain consists of a band of gold enriched with precious stones and pearls, and heightened by four Maltese crosses alternating with fleur de lis. Imperial arches spring from the crosses, uniting under a mound, above which rises a jeweled cross. The heir to the throne, royalty of each degree, and earls are entitled to wear coronets.

The term crown is used also in the sense of royal authority and the state. Thus the English speak of the prerogative of the crown, crown lands, crown ministers, crown lawyers, crown officers. Crimes, which in this country are called offenses against the state, are in the United Kingdom offenses against the crown. The governor-general of Canada is said to be appointed by the crown.

Crown. See MONEY.

Crown Jewels. See TOWER OF LONDON.

Crucifix. See CROSS.

Cruikshank, krŏŏk'shank, **George** (1792-1878), an English caricaturist and artist. He was a native of London. When a child poverty prevented him from gaining a general education. Throughout his life he showed ability but want of culture. At the age of fifteen he was known as an illustrator of children's books. Fame was achieved by a series of etchings made for *Bentley's Miscellany* in 1837 to accompany *Oliver Twist,* then running in serial form. *The Bottle,* a series of eight large plates, represents the various stages of drunkenness in a style worthy of Hogarth. *Tam O'Shanter, The Merry Wives of Windsor, Punch and Judy, Boz,* the *Comic Almanac,* and many other subjects afforded opportunity for humorous sketches. The British museum is the fortunate possessor of over 5,000 sketches by this humorist. While he did not create types, like the G. O. P. or Uncle Sam of Nast, it may be said that few artists have done more to ridicule vice and purify the public taste than he. See NAST; CARICATURE.

Crusades, a long struggle between Christian Europe and Mohammedan Asia for the possession of the Holy Sepulcher, or burial place of Christ. It lasted from

1100 to 1300. The several spasmodic movements of greatest force are known as The Eight Crusades. In an age when a pilgrimage to a shrine was the accepted way to win sanctity, forgiveness, or health, a pilgrimage to the tomb of Christ at Jerusalem was the holiest of all good works. The Canterbury pilgrimage described by Chaucer is but an incident compared with the stream of pilgrims pouring into Palestine. In 1064, for example, a single company, setting out under the leadership of the Archbishop of Mainz, numbered 7,000 men. The Saracens, that is to say, the Arabs, in possession of the Holy Land, welcomed the pilgrim as a source of revenue; but the Turks who captured Jerusalem in 1076, though of the same religion as the Arabs, began to persecute the Christian travelers.

A tremendous excitement ensued. Pope Urban convened a council. Fired by his eloquence, the multitude broke out into a frenzy of enthusiasm. "God wills it, God wills it," was the cry. A holy war was proclaimed against the infidels. The ambitious, the pious, the criminal, the needy, and the adventurous all found opportunity. The Knights of St. John, the Templars, and the Teutonic Order were all organized during this period. Immense hordes of Europeans were precipitated upon Asia Minor and Syria. In 1099 the Christians obtained possession of Jerusalem. Four brief European kingdoms were set up in Asia, but under Saladin the Moslems retook the Holy City.

Among the many expeditions was the Children's Crusade, about 1212, instigated by the wild preaching of the times. Upwards of 20,000 German children and 30,000 French, both boys and girls, reinforced by bands from England and other countries of Europe, made their way on foot to Marseilles, Genoa, and to the Mediterranean ports. They expected the waters to part for them, as did the Red Sea before the children of Israel. Many were taken on board ships and conveyed to far-off shores where they were sold as slaves. Others were conveyed to the Holy Land. Large bands made their way overland into the territory of the Turks, where they were slaughtered without mercy or were sold into slavery. Of the vast number of children that set out to rescue the tomb of Christ, a mere remnant of 700 was rescued from the infidels, seventeen years later, by Frederick II. Movements like these seem incredible. They remind the reader of the migrations of lemmings from the forests of Scandinavia to the sea. They resulted in the loss of thousands, possibly of millions of lives, with no compensating benefit.

The Third Crusade, led by Frederick Barbarossa, Philip II of France, and Richard the Lionhearted of England, is the most noted; but through jealousies it accomplished perhaps the least. So far as political changes go the Crusades bore no result. The Turks fastened their grip on the Levant and hold it to this day. The civilization of Syria has been crushed out, but the Europeans learned much. Intensely as they despised the Turk, they learned to respect the Arab, and brought home many new notions. The commercial importance of Venice and Genoa was greatly increased. The Crusaders acquired a taste for the products of eastern lands. The spices, sugar, dates, melons, and apricots of the East became known in the West. Cotton, silk, calico, rugs, satins, velvets, muslins, and damasks were introduced. The use of various eastern oils, perfumes, and dyes began. The Crusaders learned how to build looms, windmills, and how to make glass. Venice and Genoa became great commercial cities and manufactories sprang up. The coarse manners of western Europe were refined, and the people became more intelligent. It is much to be regretted that the period of Crusades did not accomplish more for the Levant, and that it did not result in driving the debasing Turk out of Europe and western Asia, but the effect on western Europe was excellent. The best picture in literature is given in William Stearns Davis' novel, *God Wills It.*

See JERUSALEM; SARACENS; WINDMILLS; RICHARD I; PETER THE HERMIT; LEMMING.

Crusoe, Robinson, a character in an interesting story of the same name. See DEFOE; SELKIRK.

Crystal Palace, a building erected at Sydenham, a southern suburb of London, in 1854. It was built of materials from the buildings of the great exhibition of 1851. The name is derived from the great quantity of glass used in the construction. The building is 1,600 feet long, 380 feet wide, and 200 feet high at the center. It cost about $4,500,000. It is now devoted to sculpture, architecture, painting, natural history, fossils, and manufactured articles. The building is surrounded by grounds, comprising 200 acres, adorned with trees, walks, statues, fountains, and flower gardens. The whole constitutes an instructive combination of park and museum. See SKYSCRAPER.

Crystallography, the part of natural science having to do with crystals, the solids with plane surfaces into which all inorganic substances when solidifying tend to arrange themselves. Though these forms are almost innumerable, they naturally fall into six classes, determined by the relation of their axes:

1. The Regular or Cubical, called also Isometric, with three equal axes at right angles, as common salt, or galena.
2. The Tetragonal or Dimetric, with axes at right angles and with one longer or shorter than the others, as yellow prussiate of potash.
3. The Orthorhombic, or Trimetric, with axes all unequal but still at right angles, as saltpeter, or sulphur.
4. The Monoclinic, with one inclined axis, as in borax, or copperas.
5. The Triclinic, with all axes oblique, as in copper sulphate.
6. The Hexagonal with three axes in the same plane, at angles of 60° and a fourth at right angles to this plane, as in some varieties of limestone.

Cuba, the largest of the West India Islands. It is the largest fertile island in America. It lies between Florida and the Caribbean Sea, guarding the entrance to the Gulf of Mexico. At its nearest approach it is less than a hundred miles from Key West, the extreme island of Florida. It is shaped "like the extended tongue of a woodpecker with a barb on the southern side of the ocean end." The greatest length following the main curve is about 800 miles. The width varies from 100 to 25 miles. Its area is 44,000 square miles, slightly surpassed in size by Pennsylvania.

CLIMATE AND PRODUCTS. The interior of Cuba is mountainous, save that plains follow one or two of the rivers. The highest peak reaches 8,600 feet. The rivers are short and rapid. A number plunge through beautiful white limestone caverns. The coast is indented by deep, safe harbors. There are several hundred small islets about the coast. The climate is moist and, save in the mountains, torrid. The soil is rich. Nearly one-half of the total area is under cultivation. Cuba, Ceylon and Java not excepted, is the most productive island in the world. It leads the world in the cultivation of sugar-cane and tobacco. In some years it produces half the world's sugar. Cuban tobacco fetches a high price in the market. Bananas, oranges and lemons, pineapples, and figs flourish. Coffee and cotton are well suited to the climate and soil. Nearly one-half of the island is yet in forests, yielding cedar, ebony, lignum vitae, mahogany, pine, rosewood, and several dyewoods. The island has mineral wealth. Copper mines have been worked since 1524. Silver, lead, and iron are found in paying quantities. Soft coal, shading off into asphaltum. is abundant.

HISTORY. Cuba was occupied by the Spaniards nearly a century before a permanent English colony had been planted on the Atlantic coast of the United States. In 1519, though not the first settlement, Havana was founded. It is situated on a fine harbor on the northern coast. Morro Castle at the entrance was fortified in 1600. The harbor with its fort was regarded as "the key to the New World." Cuba became a source of revenue to Spain. When the South American countries threw off the yoke of Spain in 1820 the "ever faithful island" remained loyal, but later became dissatisfied with oppressive regulations, especially an act in 1825 placing Cuban lives and fortunes under the absolute rule of a military commander.

Frequent uprisings were followed by cruel tortures and executions. During the

greatest of the outbreaks, 40,000 Cuban lives were lost and over 200,000 Spanish soldiers were carried away by yellow fever. The cost of this Cuban insurrection, including the loss of property, was reckoned at $300,000,000. At this time the South American Republics were anti-slavery. It was feared that independent Cuba would free her slaves. It has been charged that the pro-slavery interests of the United States prevented our helping Cuba to independence. On the other hand, the anti-slavery sentiment in the United States opposed the annexation of Cuba, because it would be admitted doubtless as a slave-holding state. So the "Gem of the Antilles" had no help from the United States, and the Spaniards were left free to wreak their vengeance on the leaders of one outbreak after another, and to continue the work of reducing one of the richest regions of the world into a jungle.

In 1895 a last and a successful uprising took place. The sympathies of the United States were with the Cubans. An American warship, the Maine, in the harbor of Havana, was blown up supposedly by a mine. The United States declared war in behalf of the Cubans. "Remember the Maine!" became the watchword. American troops, including the Rough Riders under Roosevelt, invaded the island. The American navy blockaded the ports, and Spain was forced to grant Cuban independence.

Government and Population. At the close of the war the island was organized as a republic. A constitution resembling that of the United States, but with peculiar clauses authorizing the United States to act as its sponsor and defender in the eyes of the world, was adopted February 21, 1901. Owing to disturbances it was necessary for the United States to intervene again; but in 1908 our troops again left Cuban soil, and it is hoped that the Cubans may govern themselves. There are six provinces, with a total population (1920) of 2,672,536, equal to that of Wisconsin or North Carolina.
the population are colored. Each province has a capital town of the name. Havana opposite Key West is the chief city,—the capital of the nation. Its population is about 300,000. Santiago, opposite Jamaica, is the second city in importance. Spanish is the official language. The predominant religion is Catholic.

Trade and Commerce. The close of the wars for independence found Cuba poor and depopulated. The United States gave aid in the last war, but requires Cuban products to pay so high a tariff on entering the United States that the industries of the country have recovered less rapidly than was hoped. Nearly half of the Cuban purchases and three-fourths of the sales are made in the United States. The chief exports are sugar, rum, molasses, tobacco, cigars, bananas, pineapples, oranges, lemons, tomatoes, potatoes, sweet potatoes, peppers, eggplant, okra, cocoanuts, figs, mangoes, mahogany, cedar, sponges, shells, horns, hides, hoofs, honey, and wax.

Much progress has recently been made. The plantations have a less neglected look. One may now travel the length of the island by rail. Towns and cities have been placed in a more sanitary condition. The ravages of yellow fever have been stayed. A system of public schools has been introduced.

Statistics. The following statistics are the latest to be had from trustworthy sources:

Land area, square miles	44,000
Population (1910)	2,150,112
Havana	302,526
Santiago de Cuba	53,614
Matanzas	64,385
Cienfuegos	70,416
Camaguey	66,460
Cardenas	28,576
Number provinces	6
Annual income	$2,900,000
Bonded indebtedness	$50,000,000
Horses	523,702
Mules	50,000
Cattle	2,500,000
Acres under plow	869,733
Value of sugar crop	$64,000,000
Value of tobacco crop	$21,000,000
Acres of sugar cane	457,000
Acres of tobacco	84,000
Acres of fruit	15,000,000
Species of native plants	3,500
Miles of railway (1908)	1,897
Iron ore mined, tons	6,000,000
Teachers in public schools	3,593
Pupils enrolled	143,000

Cubeb, a climbing shrub of Java, New Guinea, and adjacent islands. It is closely

related to the peppers. When dried its berries resemble black pepper, except that they have short stems or stalks. Cubebs are administered for a number of ailments, and are smoked as a remedy for catarrh and asthma. See PEPPER; MEDICINE.

Cuckoo, a family of birds allied in some respects to the woodpecker. There are well on toward two hundred species of cuckoos, and thirty-five are found in the New World. Two toes are directed forward and two backward after the manner of woodpeckers, but the cuckoos use their feet for grasping limbs rather than for climbing. The cuckoo of literature is a widely diffused bird, found in the northern part of the Old World in summer, and in India and northern Africa in winter. In England and temperate Europe its well known note is the harbinger of spring.

The cuckoo is a grayish bird about fourteen inches in length. It lays an egg no larger than that of the skylark, and has incurred a bad reputation by neglecting to build a nest of its own. Single eggs are deposited stealthily in the nests of small birds to be hatched by hedge sparrows, wagtails, skylarks, robins, thrushes, and buntings. The young cuckoo is all greed and appetite. It soon shoulders its foster brothers and sisters out of their own nest. The foster parents, the owners of the nest, work untiringly in their frantic attempts to keep its crying mouth full of worms. As soon as able to fly, it goes off and leaves them. The young cuckoo, therefore, though deserted by its own parents, is the type of ingratitude.

Although outranked by the skylark and the nightingale, the cuckoo was one of the earliest songsters to attract the attention of English poets, because of its mysterious life. The following bit of lyric is of unknown date and authorship, but it precedes Chaucer by some centuries. With modernized spelling it runs as follows:

Summer is a-coming too,
Loud sings cuckoo.
Groweth seed and bloweth mead
And springeth the wood new,
Sing cuckoo, cuckoo.

The red-billed and the yellow-billed American cuckoos have better manners than their British cousin. They breed throughout the eastern part of North America and winter in the tropics. Both

Yellow-billed cuckoo.

lay from three to five greenish eggs in nests, usually resembling those of a dove, and feed their own young, chiefly with caterpillars.

Many German homes contain specimens of the famous cuckoo clock. In place of striking, a clever imitation of the cuckoo calls the hour.

Cucumber, with squashes and melons, a member of the gourd family. The garden cucumber is native to southern Asia, but is cultivated in gardens as far north as the center of England. Of late the market demand for fresh cucumbers has led to the investment of money in forcing houses in which cucumber vines are trained to run on frames beneath a glass roof. The cucumbers hang down from the vines in easy reach. A small house will raise a surprisingly large number of cucumbers for winter and spring market. Garden cucumbers require a rich, sunny spot. Seed should not be spared, as the young plants are especially subject to the attacks of in-

sects. The plant stops yielding as soon as a few cucumbers are allowed to turn yellow. Young cucumbers may be put down in brine for salt pickles, and later the salt may be soaked out and the cucumbers placed in vinegar for sour pickles. Gherkins are a small kind of cucumber suitable for pickles. See GOURD; VEGETABLES.

Cud Chewers, or Ruminants, an order of quadrupeds. All ruminants have a singular faculty of chewing the cud. They gather their food, chiefly grasses, herbs, or twigs, hastily. Ruminants have four stomachs. In swallowing they are able to admit food into either stomach at will. The first stomach is called the paunch. It receives vegetable matter, bruised at a first chewing. From the paunch food passes into the second or honeycomb bag, a small globular stomach, which seizes the food, moistens it, and presses it into little pellets or cuds. After gathering food for a time, the animal lies down or stands at rest, and raises these cuds into its mouth, and chews them in great apparent contentment. Food thus re-chewed descends into the third stomach, from which it proceeds to the fourth stomach, where true digestion takes place. In the young ruminants the fourth stomach is the largest of the four, so long as they continue to live on milk. The paunch is developed by pasturage. By chewing the cud an ox extracts about ten or twelve per cent more food from dry hay than a horse does. Cud chewers are divided into four families.

1. The ox family.
   a. Domestic cattle.
   b. The goat kind.
   c. The sheep kind.
   d. The antelopes.
2. The giraffe family.
3. The deer family.
4. The camel family.

Cuirass. See ARMOR.

Culloden, kŭl-lō′den, a battlefield in the Highlands of Scotland, four miles east of Inverness. Here, April 27, 1746, Charles the Pretender and his Highland adherents made the last stand of the Stuarts. They were scattered to the four winds by the English Duke of Cumberland. Charles lay in hiding for weeks until he had opportunity to escape to France. He made no further attempt to secure the British crown. For the Highlanders the day was one of disaster. Hundreds of their fighting men lay slain on the heath, and the coronach or wail for the dead was heard in every glen and mountain fastness. A monumental cairn marks the spot of the battle. See SCOTLAND.

Cumaean Sibyl. See SIBYLS.

Cumberland Road, a great national highway. It was projected in 1806 in Jefferson's administration on the model of the great Roman roads. It was intended at first to run from Baltimore to the Ohio and was afterward extended. Between 1806 and 1840 the general government expended nearly $7,000,000 in laying out, grading, building bridges, and macadamizing. The road ran from Baltimore westward through Fredericksburg, Cumberland, and Wheeling; through Ohio to Vandalia, Illinois—800 miles in all—where further construction was abandoned as unnecessary on account of the building of railways. The various portions of the road have been surrendered by the general government to the counties through which it passes. Though now almost forgotten, the Cumberland road was one of the most famous stage roads in the world. A ride on the top of a coach, bowling swiftly through the mountains of western Maryland and West Virginia, is described by travelers as a trip not easily forgotten. See ROAD.

Cummin. See ANISE.

Cumulus. See CLOUD.

Cuneiform (kū-nē′ĭ-fôrm) **Writing,** a primitive system of writing in use among the Chaldeans, Babylonians, and Assyrians. The name is derived from the Latin word *cuneus,* meaning wedge, and has reference to the triangular shape of the characters. The writer impressed his characters with a stylus on soft clay tablets which were afterward kiln baked. If stone was the material, the characters were cut with the chisel. For some account of the enormous number of tablets found in the ruins of ancient cities, see BABYLON.

Cupid, in Roman mythology, the god of love. He was the son of Mercury and Venus. The Romans identified with their

Cupid the Greek Eros and the legends concerning him. Cupid is usually represented as a chubby, winged boy with a bow and quiver full of arrows, with which to pierce the hearts of his willing victims. Sometimes the ancients represented him as riding on a lion or a dolphin; sometimes as breaking the thunderbolts of Jupiter, which were ways of signifying his power. Cupid is usually spoken of as blind, or blindfolded. He figures in a large number of legends. His name is of frequent occurrence in literature, and he has always been a favorite subject with sculptors and painters. Figures of children, with or without wings, introduced into works of art are frequently called cupids without any mythological allusion. See EROS.

Some Cupid kills with arrows,
Some with traps. —Shakespeare.

Love looks not with the eyes but with the mind,
And therefore is winged Cupid painted blind.
—Shakespeare.

Curate. See EPISCOPAL CHURCH.

Curb. See STOCK EXCHANGE.

Curculio. See WEEVIL.

Curfew, a Norman French term meaning to cover the fire. It belongs to a time before the invention of matches, when fires were covered up with ashes to keep live coals over night. In the reign of William the Conqueror a bell, called the curfew bell, was rung at night, as a signal to cover up the fires and retire to rest. School readers formerly taught that the curfew was an oppressive measure intended to prevent the English people from sitting up and plotting treason; but it is now believed that it was introduced in London, at least, as a measure of protection against fire. The ringing of the curfew bell is an excellent custom still adhered to in many parts of rural England. The usual hour is nine o'clock. During the past quarter of a century many cities and towns of the United States have passed what are known as curfew ordinances, requiring young people to leave the streets and retire to their homes at eight or nine in the evening, according to the season. When a town bell is not available, a few sharp strokes are given on the fire gong. The curfew ordinance meets with wide approval among those who believe that boys and girls should be at home after nightfall. It is believed that the universal adoption of this measure would do much to reduce juvenile vice, and to empty our reform schools.

Curie. See RADIUM.

Curlew, a shore bird of the snipe family. The curlew is a wading bird of marshy and upland places, where it secures snails, worms, crickets, grasshoppers, beetles, and crayfish. Of North American species, the jack-curlew breeds in British America and winters from the Gulf States to Patagonia. The long-billed curlew, a fine bird two feet high, has a curved bill six inches long. It is called the sickle-bill also. It probes the earth to six inches in search of food. In lighting the wings are lifted gracefully above the back. In Scotland the European curlew is called a whaup. See SNIPE.

'T is the place, and all around it, as of old, the curlews call,
Dreary gleams about the moorland flying over Locksley Hall. —Tennyson, *Locksley Hall.*

Curling, an ancient Scottish game played on the ice. A strip of smooth ice is chosen for a rink. Two marks called tees are located about forty yards apart. The game is played with smooth hemispherical stones, weighing from thirty-five to fifty pounds, fitted with stone or wooden handles. Each player has a pair of these stones, which he holds something like a flatiron. The opposing players stand at one tee and slide their stones with great force along the ice toward the other tee. As in bowls, quoits, and pitching horseshoes, the stone which lies nearest the tee counts. No small part of the player's skill lies in his ability to drive his opponent's stone away from the tee and leave his own in position. The game is a popular one, not only in North Britain, but in Canada and in some parts of the United States. International games, or bonspiels, are not infrequently played, as between St. Paul and Winnipeg.

Curling is attended with a great deal of jollity and merrymaking. The game may be played by any even number of players from two up to sixteen. In Scotland, es-

pecially, contests between parishes are a regular winter event looked forward to by young and old; while crack teams from different parts of the country meet each other for final games. A code of rules has grown up to fit every conceivable emergency, as in the case of football, baseball, and golf.

The teams of curlers usually dress in Highland costume, at least in Highland caps, and as a sign of fellowship they carry the brooms with which they are wont to sweep the ice when it seems that a stone is not likely to go quite far enough.

Currant, a well known garden fruit. The currant is closely allied to the gooseberry, but it is smooth and more juicy. A number of kinds, both red and black, grow wild; but the red currant *(ribes rubrum)* and the black currant are the currants of the garden. It is a native of cool climates, but may be cultivated farther south in shaded places, such as orchards. The Gulf States are too warm, but with mulching, currants do remarkably well in the dry climate of the plains. Currants are hardy and endure neglect, but respond quickly to rich soil and cultivation. Currants are started by cuttings about ten inches long, planted with two or three buds above ground. Young wood is more productive than old. The old stems should be cut out as fast as young stems offer to take their place. Allow from six to eight stems to grow in each clump. Currant growers find it profitable to set new plants each year and root out those that exceed eight years. The currant worm is a great pest and can be fought to best advantage by sprinkling with a teaspoonful of powdered hellebore to a gallon of water. Currant borers can be gotten rid of best by digging up and burning the plants. Care should be used to start again with healthy cuttings. The name of the garden currant is derived from a similarity in size to the eastern currant, for which see the following article.

Currant, a Grecian raisin, produced by drying the small, sweet, seedless grape of that country. These grape currants are one of the chief crops of Greece and are much in demand by makers of cakes and puddings. Currants of this sort are really Grecian raisins. They get their name from Corinth, the city that sent most of them to market. Corinth has been changed to currant, much as "Worcester" has become "Wooster."

Currency. See MONEY; GREENBACKS; COIN; BANK.

Currents, Ocean. The waters of the ocean apart from the movement called tides, are in constant motion. At varying depths portions of the water seem to move more rapidly than the main body, much as if they were flowing from a higher to a lower level. These streams, flowing in definite directions and with a fairly uniform velocity, are called currents. The cause of ocean currents was long unknown and is yet, to some extent, a matter of theory. It is conceded generally that the chief causes are winds and the unequal heating of the waters in polar and equatorial regions. Surface currents have in general the direction of the prevailing winds. Small currents, formed as the water drifts before the wind, may be seen along the coasts of lakes. Many ocean currents begin in a similar way. The differences in temperature cause movements slower than those of the surface current but quite as important. As the waters near the equator become warmed they expand and a flow toward the poles sets in, while the cold and heavier waters of the polar regions settle, and flow as undercurrents toward the equator. The result is a constant circulation. The direction of both surface and deep-sea currents, however, is modified by the winds, by the continents which interrupt and turn them aside, and by the rotation of the earth on its axis. The earth's rotation affects the currents of the sea much as it does those of the air. By referring to the article on WINDS, an explanation of this action will be found. This gives rise to one of the main effects of currents, for we find western coasts warmer than eastern in the same latitude, and this in instances where other causes are insufficient to account for the difference. A good example is found by comparing the east and west coasts of Greenland, the latter being much the more habitable of the two. Were it not for the

equalizing effect of this interchange of waters between north and south, the ice caps of the polar seas would extend into temperate regions, while the heat of the equatorial waters would cause many forms of life to become extinct.

The physiographic effects of currents are less than those of waves, the greater force of the waves causing more erosion than can be effected by the slower movement of the currents. The currents, however, transport large quantities of material to great distances. Shells of marine animals native to the Caribbean Sea are found on the Carolina coast, brought thither by the waters of the Gulf Stream. Quantities of coral polyps who are building lands in the sea continually, are supplied with food by the various ocean currents. These are but instances of the great work done by these rivers of the sea.

Among the many ocean currents of importance a few may be mentioned by name. The Equatorial Current, nearly 1,000 miles broad, flows in a westerly direction, before the prevailing winds of that region, at a rate of ten or fifteen miles a day, and circles the earth except where the continents intervene. Meeting the continents on their eastern coasts this current, both in the Atlantic and in the Pacific, divides, flowing to north and south. In the Atlantic the northern and larger of these branches flows as a slow drift, partly into the Caribbean Sea, partly west of that body of water, between the West Indies and into the open sea. The stream which enters the Caribbean flows next into the Gulf of Mexico and emerges as the Gulf Stream. This stream is regarded as the most important of Ocean Currents and has been more thoroughly studied than any other, this study resulting, however, in considerable difference of opinion as to what is actually accomplished by the current. As it leaves the Florida strait it is a narrow, deep current of a peculiar blue color readily distinguished from the lighter water through which it flows. Its velocity, varying with the winds, the seasons, the age and passage of the moon, is from three and one-half to five and one-half miles an hour. As the Gulf Stream advances to the north along the American coast its velocity decreases. In the latitude of Cape Hatteras it turns, slowing toward the east, growing broader and shallower. It is divided by the European coast, a part turning southward again and the rest flowing in a northeasterly direction, past Scandinavia, where its warmth keeps the port of Hammerfest free from ice, to the Arctic Ocean.

So great difficulty attends the study of ocean currents, so many and such varied circumstances modify their direction, velocity, depth, and temperature, as well as their actual results, that the subject, as a science, is still in its infancy. Their influence on physiography, and on climate, is sufficient to make the subject of interest, but when their influence upon practical navigatition is considered the matter becomes one of vital importance.

Curtis, George William (1824-1892), an American editor, lecturer, and author. He was a native of Providence, Rhode Island. His reputation was first won through his sketches of travel, *Nile Notes of a Howadji,* written while traveling in Egypt and Syria. For many years, including the period of the Civil War, Curtis was political editor of *Harper's Weekly,* which he made a powerful supporter of the Union cause. For many years he was editor of the "Easy Chair" in *Harper's Magazine.* It has been said that in this work "his province and his influence resembled those of Addison and Steele in the best issues of the *Spectator.*" It is by his chatty notes and observances in the "Easy Chair" department that Mr. Curtis is best known. Among his later books are *Lotus Eating, Potiphar Papers, Prue and I.* Mr. Curtis was also known as a successful lecturer. He delivered notable memorial orations on Burns, Bryant, Irving, Lowell, and others.

In the "Easy Chair" of *Harper's Magazine,* Mr. Curtis displayed the highest qualities of an essayist. Comment on art, music, literature, current events, politics, society, was here set forth, month by month, in graceful and flexible style, animated by genial humor, often by keen satire, but always regulated by the purest taste. So nice was his sense of literary proportion, that local and ephemeral circumstances, preserved in these monthly records, have keen interest for the reader of to-day.—Shaw.

Curtius, ker'shĭ-ŭs, **Marcus,** a hero of Roman legends. The story runs that in the year 362 B. C. a chasm opened in the forum, or marketplace, at Rome. The soothsayers were consulted and predicted great calamity, but declared that the chasm would close and calamity be averted if that which constituted the glory of the state were thrown into the abyss. While discussion was in progress as to what constituted the glory of the state, Curtius appeared, mounted on horseback and shining in armor. He exclaimed, "Rome has nothing more precious than arms and valor," and leaped into the chasm, which immediately closed.

Curzon, George Nathaniel, Lord (1859-), an English statesman. He was born at Kedleston. His education was received at Oxford, and in 1885 he became private secretary to the Marquis of Salisbury. From 1885 to 1898 he represented the Southport division of Lancashire in Parliament, acting as under-secretary for India in 1892, and under-secretary of state for foreign affairs in 1895. In 1898 he was made Viceroy and Governor-general of India, and at the same time raised to the Irish peerage, with the title of Baron Curzon of Kedleston. His administration was acceptable in India and also to the home government. He furthered the cause of education, and instituted many reforms in the management of railways, post and telegraph services, and other government monopolies. In 1905 he resigned in consequence of disagreements with Lord Kitchener concerning the system of dual control in the Indian army. In 1908 Lord Curzon was elected a representative peer of Ireland and took his station in the House of Lords. He is the author of several books, *Russia in Central Asia, Persia and the Persian Question, Problems in the Far East.*

Custer, Gen. George Armstrong (1839-1876), an American soldier. Having finished his course at West Point he was sent from Washington to Gen. McDowell with dispatches just in time to take part in the battle of Bull Run. He attracted the attention of Gen. McClellan and was made an aid-de-camp. Later he became a dashing cavalry leader in the Shenandoah Valley. He was first over the river at Chickahominy, and had two horses shot under him at Gettysburg. He was promoted rapidly for bravery, and was a brigadier general four years after graduation. For a short time after the Civil War he did unwelcome patrolling in Kentucky and other states, but from 1866 to the time of his death his name is associated with those of Miles and Crook as an Indian fighter on the plains. An expedition to the Black Hills is fittingly remembered in Custer and Custer County, South Dakota. His headquarters were at Fort Lincoln, opposite Bismarck, for several winters. In the summer of 1873 his regiment was detailed to guard the engineers who were locating the extension of the Northern Pacific Railway from Bismarck through the Bad Lands to the Yellowstone Valley.

In 1876 the Sioux Indians, who saw that the advance of the railroad was depriving them of their last hunting grounds, grew ugly; and the war department decided upon a general campaign in the Yellowstone country. Gen. Sheridan directed Crook to lead a column from the south against the villages of chief Crazy Horse; and Terry, with a force including Custer and his command, was dispatched against chiefs Sitting Bull and Rain-in-the-Face. Gen. Custer accompanied Terry by way of the Missouri and Yellowstone Rivers to the mouth of the Rosebud, when they were joined by a column from the west under Gen. Gibbon.

The campaign was planned well enough. Three columns were to converge in the Yellowstone country and crush the Indians. Either column was supposed to be strong enough to disperse any force the Indians might collect. But no one had foreseen that so many dissatisfied braves would leave the reservations and join the hostiles. Unknown to Gen. Terry, Crook was repulsed, and retired to wait for reinforcements. Gibbon was sent south from the Yellowstone up one valley, Custer was sent up another searching for the Indians. Custer followed a fresh Indian trail up the Rosebud and crossed over into the head waters of the Little Big Horn. Here

he came upon the Indians, and, not dreaming they were in such force, he divided his command, ordered one-half under Major Reno to attack in the rear while he made a bold dash for the front. Reno soon found that the Indian camp was large, and drew off to a safe distance and fortified himself, leaving Custer to make the best of it. Had Reno attacked vigorously it is thought the Indians might have been stampeded; but, be that as it may, the wily savages surrounded Custer's band with din, whoop, and blazing Winchesters, and wiped out "Yellow Hair" and his troopers to a man. Instead of a few hundred warriors, the Sioux were 2,500 to 3,000 strong. The troops under Crook and Terry united later, and drove the Indians to their reservations or north into Canada, but it was too late to save Custer.

Longfellow has commemorated Custer's last battle by a poem entitled "The Revenge of Rain-in-the-Face," beginning

> In that desolate land and lone
> Where the Big Horn and the Yellowstone.

The battle ground is now occupied by a fitting monument. In Custer, Custer County, and Custer Creek of southeastern Montana, the name of the gallant soldier has found a lasting record. Sitting Bull, Custer's old enemy, lies in the military burying ground at Fort Yates. *Boots and Saddles,* by Mrs. Custer, who accompanied her husband on many of his less important expeditions, is a readable account of experience.

Customs, taxes collected on foreign goods. The United States maintains custom houses or offices at all our principal ports and wherever railroads cross the border. All imported goods are examined and duties are collected according to the tariff laws established from time to time by Congress. Some commodities, as animals for breeding purposes, hard coal, tea, coffee, dyewoods, newspapers, magazines, printing paper, raw silk, and uncured furs, are entirely free. Others, as butter, 2.5 cents a pound; honey, 10 cents a gallon; poultry, 1 cent per pound; vinegar, 4 cents a gallon; prunes, 1 cent a pound; hay, $2 a ton; onions, 20 cents a bushel; substitutes for coffee, 2 cents a pound; straw, 50 cents a ton; pay a specific duty according to weight or measure. Others again, as pins, 20 cents on the dollar of value; railroad ties, 20 cents; sealskin sacques, 40 cents; watches, 30 cents; jewelry, 60 cents; porcelain, 50 cents; and musical instruments, 35 cents, pay duty according to their money value. Some articles pay a double tariff, both specific and *ad valorem,* that is, according to weight and value. Carpets, knit goods, cigars, silks, yarn, and clothing belong here.

For the convenience of merchants, custom houses are maintained at many interior points to which foreign goods may be sent in bond, that is to say, in sealed cars or packages to be opened and examined on reaching their destination.

In 1914 the customs receipts of the United States were $178,913,704, and the internal revenue receipts for the same year amounted to $3,839,619,639. In 1913, the last year under the Payne-Aldrich Tariff Act, the customs receipts were $318,891,396, the highest in the history of the country. The Simmons-Underwood Bill lowered the duties on many commodities.

The collection of customs is in charge of the Treasury Department. The most important custom house in the United States is that of New York. The building cost $10,000,000. The collector has a salary of $12,000 a year. Several subordinates receive half as much. The receipts are larger than those of all the other custom houses combined. See COMMERCE.

Cuticle. See SKIN.

Cutlery, edged instruments. The term is akin to colter, from the Latin *culter,* meaning a knife. No doubt prehistoric man used the sliver of a bone or the splinter of a bamboo for many purposes for which we use a knife. The most primitive edged tools found in caves and burial places are sharp-edged flakes of flint, obsidian, or similar stones. The first metal knives and daggers were made of bronze. Later came iron instruments, and, last of all, came steel. The ancient Greeks and Romans understood the use of steel; yet as late as the beginning of the Christian era surgeons as well as warriors used bronze cutlery. Both swords and lancets

of bronze have been found in the excavations of Pompeii. Among the celebrated swords of the Middle Ages were the Damascus blades made in Syria, and the sword blades of Toledo, Spain. Sheffield, England, was noted as a center of the cutlery business as early as the time of Chaucer, one of whose characters bore a Sheffield whittle in his hose. Sheffield is still the great center of table and pocket cutlery. Birmingham leads in the making of swords and implements. The jointed knife, now known as a jackknife, is said to have been introduced into England from the Low Countries in the reign of Elizabeth. The spring back was invented a century later.

The making of a good blade, whether for a knife or a razor, is an art in itself. Forging, hardening, tempering, grinding, and polishing have been reduced to a system; so that, of a score of knives or razors of a given brand, especially of more expensive makes, there is little difference in quality.

The term cutlery is somewhat elastic. Table knives, with dull edges, and forks, with no edge at all, are included with clasp knives, razors, scissors, and similar articles under the name of cutlery; while sickles, scythes, and a great number of other sharp-edged tools are considered implements, or else they are grouped with surgical instruments, pruning knives, butchers' and shoemakers' knives, chisels, and augurs, under the head of edged tools.

In keeping with their usual reputation for inventive genius, American manufacturers have introduced many improved methods in the making of tools, knives, and razors. American cutlery now ranks with the best European makes, and some lines find a large European market. The business of making cutlery is now an important one. The following statistics are taken from the United States census report and make it clear how valuable this industry has become:

Number of factories	309
Capital employed	$16,532,383
Wage earners	12,069
Annual wages	$5,673,619
Cost of steel and other material	$5,116,042
Wholesale value of cutlery	$14,881,478

See SHEFFIELD; TOOLS; TOLEDO; SWORD.

Cutter. See SLED.

Cuttlefish, a well known mollusk without an external shell. The cuttlefish is known to zoölogists as a cephalopod. It is related to the squid and the octopus. The body is oval, but is somewhat flattened. A thin flap of skin like a frilled fin runs down each side. The animal has two prominent eyes. The mouth is surrounded by eight short arms and two long tentacles, or feelers. Each arm carries four rows of raised suckers. The two long arms, or tentacles, terminate in circular, saucer-shaped suckers. The cuttlefish uses these arms to attach itself to objects and to seize prey. The cuttlefish "walks" by laying hold of stones and other objects with its suckers and dragging the body about. By expelling water forcibly from a tube beneath the head, the animal is able to dart backward with unexpected rapidity.

The common cuttlefish of the British coast is a pest to fishermen. It ruins the fish in their nets and is difficult to catch. When alarmed the animal ejects an inky liquid which discolors the water for yards, and enables the cuttlefish to escape unseen. This liquid is the sepia ink of commerce, so indispensable to draftsmen. An internal shell at the back of the body is the cuttlefish bone fed canaries. It is also crushed to form a powder, called pounce, which was shaken on a newly written page to dry the ink before blotters were invented. Pounce is still used for tooth powder, and in the making of molds for silver castings. Clusters of cuttlefish eggs are cast ashore by the waves and are sometimes called sea grapes.

A very curious habit of the cuttlefish is the way it changes its color. This it can do at will. If it happens to find itself on a sandy bed, where the pebbles are variously colored, yellow and black, it can change its color so that it takes a keen eye to distinguish the animal from its surroundings. If it moves into a region where dark rocks abound, the little spots, specks, or stripes with which it was adorned a half-hour before disappear, and a dark, nearly

black animal is seen. These sudden changes in color are brought about by means of large cells in the skin, which are filled with coloring matter; as these cells contract or expand, the color of the animal changes.

See Squid; Octopus.

Cutworm, the caterpillar of certain nocturnal or owlet moths. The eggs are laid in midsummer. During the autumn vegetation is so plentiful and the caterpillars so small that they attract no notice; but they stay in the ground over winter and commit frightful ravages in the spring. The common cutworm crawls about chiefly at night in search of a tender meal, and cuts off a young plant at the very surface of the ground. During the daytime they may be found coiled up comfortably in the ground near by. When night arrives the cutworm may feed again on the stub of the same plant, or it may pull the top into the ground for additional meals; but the chances are that it will cut off a plant or two each night until the stems are too old and tough for that kind of work. Entire fields of beans, peas, onions, and corn, or melon vines, may be swept away in a few nights. For a few garden vegetables it is quite possible to insert old cans around choice plants, and to search the cutworms out each morning. The earlier, the more easily they are located. Gardeners say that holes a few inches deep, made with the handle of a hoe, make good traps. In hunting for a place to hide at daylight the worm falls in, and may be taken in the morning hours before he climbs up the steep sides and gets out again. Gardens dressed heavily with barnyard manure are especially subject to cutworms.

Cuvier, kü-ve-ā′, **Georges** (1769-1832), a noted French scientist. He was educated at Stuttgart. After a term of service as a tutor in Normandy, he was invited in 1795 to Paris to a position from which he was soon transferred to a chair of zoölogy in the Garden of Plants. Here he began at once what was destined to become the largest natural history collection in Europe. Cuvier was honored with membership in the scientific societies of France, and became a leading spirit. Under Napoleon he was instrumental in the founding of academies in newly attached territory. From this time on, save during the reign of Charles X, he held high office. He was appointed minister of the interior just before his death. At his death he was considered the most eminent naturalist in Europe.

Cuvier's service to science is a classification of animals which is followed by scientists to the present day. In his *Animal Kingdom,* he classified all animals according to the arrangement of their bones or hard parts, rather than according to their appearance or size. His chief headings were Vertebrates, Articulates, Mollusks, and Radiates. His works are a mine of information in natural history, and "afford the strongest arguments in favor of the theory of a progressive series of animals, advancing from the most simple to the most complex forms of organizations." The chalk basin in which Paris is situated supplied Cuvier with a variety of interesting fossils. He is regarded as the father of the study of paleontology, or the science of fossil life. He was prominent, too, in the science of comparative anatomy. He taught, for instance, that the flipper of a seal, the wing of a bat, the wing of a bird, the fore-leg of a horse, and the arm of a man are one and the same organ modified by circumstances. He wrote scientific papers innumerable. His published works reached many volumes.

Cybele, sĭb′e-lē, or sĭb-ē′lē, in classical mythology, the "Great Mother of the Gods." Her worship seems to have originated in Phrygia. Her proper name was Agdistes, but, as she was the goddess of caves, mountains, and the haunts of wild animals, she came to be called Cybele, the Phrygian word for caves. Her priests were called Corybantes, and her rites included wild dances accompanied with drum and fife. She was early identified with the Greek Rhea, and is sometimes called Rhea Cybele. The Romans identified her with their Ops, and used both names—Ops and Cybele. According to the old legend Cybele was the daughter of Maeon, king of Phrygia. Maeon, vexed that the child was not a boy, exposed her on Mount Cybelus.

There the infant was nourished by panthers and lions, and later was cared for by the wives of herdsmen. Grown to womanhood, she invented the fife and drum, and by their aid healed diseases of men and beasts. She became enamored of Atys, a beautiful youth. Her parents now recognized and received her, but her father was displeased with her lover, and had him executed, causing Cybele to become demented.

Among the Greeks, Cybele was regarded as the wife of Cronos and mother of the Olympian gods. She symbolized the fruitfulness of the earth. She was the goddess of vine-growing, agriculture, and town life. During the Second Punic War, the Sibylline Fates prophesied that if Cybele's image were brought to Rome, it would expel a common foe. This image was nothing but a dark, quadrangular, meteoric stone in a cave in the mountains of Phrygia. It was brought to Rome, and thus the worship of Cybele was introduced among the Romans. She was later identified with the Roman Ops, goddess of plenty.

Cybele is represented in ancient art as a matronly woman, usually seated, with lions at her side. Sometimes she wears a mural crown, and a veil is draped about her head, symbolizing the mysterious in nature. Other emblems are a staff, a drum, ears of corn, the sun and moon in either hand. Occasionally she is pictured as riding in a chariot drawn by lions, and bearing a thunderbolt in her hand. These are all symbolic of power, and of Cybele's aid in advancing civilization.

See ATALANTA; ATYS.

Cyclades, the principal group of islands in the Aegean Sea. They are twelve in number. The name is Grecian, and is derived from the same source as cycle, bicycle, etc. It was given because the islands were thought to form a ring about Delos. The islands are still known as the Cyclades, and form a department of modern Greece. The islands are volcanic. The inhabitants are engaged in fishing and in raising olives and grapes. The goat is the chief domestic animal. The capital is Hermopolis. Area, 928 square miles. The population of the Cyclades in 1907 was about 130,000.

Cyclamen, sĭk'lă-mĕn, a beautiful greenhouse flower widely introduced from Persia. The flower scapes and leaves spring from a tuber. The leaves are heart-shaped and are beautifully variegated. The petals bend sharply backward, giving the flower at first glimpse somewhat the appearance of a violet. The petals vary in color from white to rose. The common varieties are scentless. The cyclamen is raised chiefly from seed. The seed appears to require two months to germinate, but in reality it produces a small corm before leaves appear. The genus belongs to the primrose family. See PRIMROSE.

Cyclom'eter, an instrument which measures and records the distance traveled by a wheeled vehicle. It came into common use with the bicycle and under various names such as odometer, auto-meter, and speedometer, is considered essential to any completely equipped automobile. These instruments look something like small clocks on whose dial one may read the distances from numbers which are moved by a train of wheels inside. They have reached a high degree of perfection, some of them having clock attachments, and indicating the speed in miles per hour and the total distance traveled, as well as that of the individual trip.

Cyclone, a whirlwind on a vast scale. As now used by scientists, the term is to be distinguished with care. The "western cyclone," a violent, destructive whirlwind of the Mississippi Valley, should be called a tornado; the still larger, violent, destructive whirlwind of the West Indies and the Atlantic is a hurricane; the very similar whirlwind of the East Indies, the Philippines, and the Pacific is called a typhoon. In the sense that a cyclone is a whirling and revolving wind, it cannot be denied that all three of these winds, the tornado, the hurricane, and the typhoon, are cyclones; but it is convenient and now customary to reserve the term cyclone for vast circular movements of air, hundreds of miles in diameter, that are taking place all the time, and are matters of every day experience.

Confining our discussion to North America, we may say, to start with, that our

ordinary breezes, calms, and winds are but parts of a cyclone, and that a cyclone is simply an ordinary wind. The prevailing movement of air in the north temperate zone is from the west. If the surface of the United States and southern Canada were a low, flat plain, with the lines of equal heat running uniformly and permanently along the parallels of latitude, we should have, so far as local conditions govern, monotonous westerly winds the year around. As a matter of fact, the air in our belt travels steadily in an easterly or northeasterly direction, but it does so in vast swirls that follow each other eastward at intervals of from three to seven days. They travel across the continent at a rate of from 500 to 1,000 miles a day. These swirls or cyclones account for the different directions of wind. As the air moves in a whirl it is evident that an east wind in one edge of a cyclone must be a west wind in the opposite edge of the same cyclone. If the wind in the east edge of a cyclone is from the south, the wind in the west edge of the same swirl must be from the north. If a locality be in the pathway of the center of a cyclone, it is evident that the wind for that locality must change in direction as the cyclone advances.

The writer recalls a personal observation of this sort at Fargo in the Red River Valley one midwinter. As the evening of a fine day drew on, a furious south wind sprang up and brought a heavy fall of damp snow. The flakes fell in rags, such as Villon describes as falling in Paris. The town went to sleep in a warm, blinding snowstorm. The next morning the air was calm, the sun was shining, and the world lay still and white. At eventide again, a high wind was raging, and the air was filled with fine icy crystals, this time from the north. It seemed as though the wet, clinging, flaky snow from the south, and the fine, icy snow from the north, with a calm between, were the eastern edge, the western edge, and the central portion of a cyclone moving toward the Atlantic coast. By getting reports from all parts of a cyclone, the United States Weather Bureau is able to forecast the weather within the area occupied by the cyclone. It is essential to understand that the direction of a cyclone as a whole is a different thing from the direction of a particular part of the cyclone. The four quarters of a wagon tire are moving upward and forward, downward and backward, but the wheel as a whole is moving forward. One edge of a swirl in a stream is moving downward, and the opposite edge is moving upward, but the swirl as a whole is going down stream.

If the reader has gained a notion of circular winds on a large scale traveling eastward, he is ready for the notion that the direction of a cyclone current is spiral, rather than circular. The origin of a cyclone is not altogether clear, but, however that may be, the center of the whirl is an area of low barometric pressure, an area in which the air is less dense and toward which the air is rushing to even up the pressure. This combination of a circular direction and a direction toward the center gives the cyclonic current more or less of a spiral movement toward the center. This increase of density is likely to be accompanied by rainfall or snowfall. The area in which this precipitation occurs is known as a cyclonic storm. The storm area is much smaller than the entire cyclone. If the observer will stand with his back to the wind—this for a wind or a breeze in the northern hemisphere—the center of the cyclone will be on the left hand. If he remember that the center is traveling eastward, he can locate the entire cyclone in a general way. Corresponding to cyclonic movements of air about centers of low pressure, we have also cyclonic movements around centers of great density —centers of high pressure. Under these conditions the currents wind spirally from the central area outward. Such an area of cyclonic movement is called an anti-cyclone. An area of high pressure, the density of which is undergoing decrease by reason of an anti-cyclonic movement, is an area of fine weather.

Put in another way, we may say that as the density of the air in an area increases, its capacity to hold moisture decreases. The central area of a cyclone is an area then of probable precipitation. On the other hand, the capacity of air to hold moisture

increases with increasing rarity. The central area of an anti-cyclone, therefore, is likely to be an area of fine weather. As a falling barometer indicates the approach of a cyclonic center, it also indicates a probability of rain. In like manner, a rising barometer indicates the approach of an area of anti-cyclonic air, and probable fair weather. Our cyclones originate in the southwest and in the northwest, or else they come from the Pacific.

Cyclops, sī′klŏps, in Greek mythology, a giant with a single circular eye in the middle of his forehead. The word cyclops means "round-eyed." There seem to be several distinct legends. According to one account, there were three Titanic Cyclops, sons of Heaven and Earth. They labored in Mt. Aetna under the direction of Vulcan, forging the thunderbolts of Zeus, the helmet of Pluto, and the trident of Poseidon.

In the adventures of Ulysses, Homer describes a race of one-eyed Cyclops, who lived solitarily in the caves of Sicily, rearing sheep and goats. When Ulysses and a number of his companions applied to one of them, Polyphemus, for aid, the Cyclops shut them up in his cave with his flocks, closing the entrance at night with a huge rock that twenty men could not have rolled away from the door. In the morning he sent his flocks out to feed, but guarded the doorway, so that his prisoners might not escape. At each meal he devoured two of them. Ulysses tried to pacify the giant by giving him a bottle of wine which he had hoarded for an emergency. The only satisfaction he obtained, however, was a promise that he should not be eaten until the last. Becoming desperate, he laid plans with his companions; and that night, while Polyphemus lay asleep, he placed the end of his staff in the fire until it was a glowing coal. This he thrust into the giant's only eye, depriving him of sight, and causing him to howl with pain. Polyphemus groped around the cavern in vain, trying to capture the Greeks, who skillfully evaded him by keeping among the sheep. In the morning they tied rams together, three and three, and by clinging to the wool on the bellies of the central rams they made their escape through the doorway, though the Cyclops felt the sheep as they passed that his prisoners might not escape. As soon as they passed beyond his reach, Ulysses and the remaining companions dropped to the ground. They bore the sheep aboard their boat and made off. When a short distance from the shore Ulysses could not refrain from taunting the Cyclops, who broke off a huge fragment of rock and threw it toward the sound of Ulysses' voice, almost swamping the ship.

Still another account represents the Cyclops as a race of giants from Thrace, who, being expelled from their own country, wandered under their king, Cyclops, throughout Greece, building tremendous stone walls, remains of which may be seen to this day at Mycenae and elsewhere. The stones are of such size that it seems incredible that ordinary people ever could have laid them in place, whence the term cyclopean rocks, masonry, etc.

In zoölogy, the cyclops is an energetic water flea that darts about with great vivacity, catching and devouring its minute neighbors. It depends on agility, rather than strength. It derives its name from an apparently single black eye in the middle of its head.

Cygnus, or **Cycnus,** sĭg′nŭs, in Greek mythology, an intimate friend of Phaeton, who, having borrowed the chariot of his father, Phoebus Apollo, nearly set the world on fire. Phaeton was slain by a thunderbolt of Jove and fell headlong into the great river Eridanus. Cygnus mourned long and deeply for his friend. He would spend hours wandering on the shores of the river which had received Phaeton's body. Frequently he would plunge into the waters, occasionally bringing to the surface some ghastly relic of the disaster. Finally, in pity or in anger, the gods changed him into a great bird. Still he sailed pensively about upon the river where his friend was drowned, often bending his long white neck and thrusting his head below the surface, as though still searching for some sad trophy of the beloved Phaeton. This is the way swans came into the world.

Cynic, sĭn′ĭk, one of an ancient school of philosophers founded by Antisthenes at

Athens about 380 B. C. The doctrines of Antisthenes were probably a severe interpretation of those of Socrates, whose pupil he had been. Antisthenes taught:

1. That virtue is the only good.
2. That pleasure for its own sake is wrong.
3. That in self-control lies the essence of virtue.

The cynics argued that, by acquiring an ability to do without the externalities of life, man becomes assimilated to God. Diogenes was Antisthenes' most noted pupil. Indeed, he so far outstripped his master that it is his name, rather than that of the true founder of the school, that comes to mind when the cynics are mentioned. The cynics carried their theories so far in trying to live the "simple life" that they not only became ridiculous, but even deserving of the contempt which they received in large measure. In fact, the name cynic is a Greek word meaning "dog," applied to these men because, in their disregard of opinion, they relapsed into carelessness and slovenly manners, and even into neglect of decency. On account of the cynic's scorn of social customs and other people's views, the word cynic has come to mean one who sees a selfish motive in all actions, and hence finds little to commend. A cynical person is therefore one who has little regard for the finer feelings or respect for the motives of others. In place of principle, he recognizes policy. See STOICS.

The cynic is one who never sees a good quality in a man, and never fails to see a bad one. He is the human owl, vigilant in darkness and blind to light, mousing for vermin, and never seeing noble game. The cynic puts all human actions into only two classes—openly bad, and secretly bad. . . . If Mr. A is pronounced a religious man, he will reply: yes, on Sundays. Mr. B has just joined the church: certainly; the elections are coming on. The minister of the gospel is called an example of diligence: it is his trade. Such a man is generous: of other men's money. This man is obliging: to lull suspicion and cheat you. That man is upright: because he is green.—Henry Ward Beecher.

Cynosura, Ursa Minor, or **Little Bear,** a north polar constellation. The Greek name signifies dog's tail. Cynosura was a nymph of Mount Ida, a nurse of Zeus, who was transported to the sky and metamorphosed into the constellation. As pictured by the ancients, the tip of the tail is marked by the north star or polar star. The name of the constellation was applied to the star. As Cynosura or the polar star was the sole guide, the compass, of the ancient mariner, it was watched by all eyes. The invention of the compass has withdrawn attention from the pole star, and cynosure is now used more frequently to designate merely a center of attraction,—any object to which general attention is directed.

> Meadows trim with daisies pied,
> Shallow brooks and rivers wide;
> Towers and battlements it sees
> Bosom'd high in tufted trees,
> Where perhaps some beauty lies,
> The cynosure of neighboring eyes.
> —Milton, *L'Allegro.*

Cypress, an evergreen tree akin to our white cedar and arbor vitae. The cypress of history is native to the countries of the Eastern Mediterranean region and eastward to Persia. A cypress in Lombardy twenty-three feet in circumference is believed to have been alive in the days of Julius Caesar. In making his road over the Simplon Pass, Napoleon turned aside to save this tree. The wood of the cypress is heavy, firm, and full of resin, which excludes water and is not subject to the attacks of insects. For these reasons cypress wood is the type of durability. It is thought that the gopher wood of the Old Testament was cypress. The ancients were familiar with the qualities of cypress wood. The Egyptians used it in making mummy cases. A statue of Jupiter carved out of cypress is stated, on the authority of Pliny, to have existed 600 years. The cypress doors of St. Peter's Church in Rome are said to have lasted 400 years and to have shown no sign of decay when changed for bronze ones. "Cypress was in request for poles, rafts, joists, and for the construction of wine presses, tables, and musical instruments, and on that account was so valuable that a plantation of cypress was considered a sufficient dowry for a daughter." Laws were engraved on cypress tablets. The family treasure was entrusted to a cypress chest. The bold cypress is a valuable American timber tree, often over 100 feet high.

The cypress of the Levant is a slender, dark, gloomy, stately tree, 60 to 100 feet in height. If a tree be cut down, the stump never sprouts again. It has long been considered the emblem of mourning and the symbol of death. Eastern nations plant it in their cemeteries, and place twigs in the coffin of the dead. The cemeteries about Constantinople are dense cypress groves. A cypress tree planted by a grave keeps solemn guard through the centuries. It is to this popular fancy that Longfellow alludes:

> And, by the cypresses
> Softly o'ershadowed,
> Until the Angel
> Calls them, they slumber!

Cypripedium, sĭp-rĭ-pē′dĭ-ŭm. See LADY'S SLIPPER.

Cyprus, an Asiatic island in the eastern end of the Mediterranean. Its area is about 3,560 square miles. Its population is about 300,000, equal to that of Minneapolis. The island is mountainous. The central peak is 6,400 feet high. The streams or short mountain torrents go dry in midsummer. Roads, telegraphs, over 300 schools, post-offices, and cables reaching Egypt and the Syrian coast, insure the intellectual development of the people. The raising of sheep and goats, of cotton, silk, raisins, wool, figs, olives, oranges, and tobacco, the making of cheese and wine, and the management of forests and sponge fishing engage the inhabitants. There are valuable quarries of building stone and ancient mines of copper. In fact, the English word, copper, is a corruption of cypress—c having the sound of k. By the ancients Cyprus was considered the halfway house between Asia and Greece. The island has been under the rule of Tyre, Assyria, Egypt, Persia, Alexandria, Rome, Constantinople, the Arabs, the Crusaders, the Turks and, since the Russo-Turkish war of 1877-8, of Great Britain, under whose rule life and property are finally secure. About one-fourth of the inhabitants are Mohammedan, the rest are chiefly members of the Greek Church. In mythology Cyprus was sacred to Venus. Recent excavations on the sites of former temples have brought forth many treasures of art.

Cyrus, sī′rus, king of Persia. Herodotus gives many incidents of his early life that rest on doubtful authority. He was a prince of Persia, then tributary to Media. In 559 B. C. he led a revolt against the authority of the Medes and established an independent Persian kingdom. Later he made war on the Medes and turned the tables, making Media a tributary state of Persia. Babylon, Syria, and Asia Minor were added to the Persian domains. The Hebrews remember Cyrus kindly because the overthrow of Babylon released them from a long captivity and permitted their return to Palestine. The Greeks had little cause to bless his memory; for he subdued the Greek cities on the coast of Asia Minor and replaced the mild rule of the Lydian Croesus by Persian despotism. He laid the foundation of the great Persian Empire that later absorbed Egypt. It extended northward and eastward until it embraced Asia from the Hellespont to the Indus. Cyrus is to be remembered as having founded the world power that preceded the still greater empire of Alexander. He well deserves the name of Cyrus the Great. He lost his life 529 B. C. in an expedition against the Scythians, a warlike people northeast of the Caspian Sea. See CROESUS; BABYLON.

Cyrus the Younger (424-401 B. C.), a prince of Persia. He was the younger brother of Artaxerxes, king of Persia. He was pardoned once, it is claimed, for attempting to supplant his brother, and was sent to rule Asia Minor. Here he interested himself in Grecian politics, taking the part of Sparta. In 401 B. C. he enlisted 10,000 Spartans, and with a large force of Asiatic allies advanced through Asia Minor on Babylon. At the battle of Cunaxa, near the great capital, his army was defeated and he was slain. The upward march, the stand of the ten thousand, and their marvelous retreat are the theme of Xenophon's *Anabasis.*

Czar, zär, the ordinary title of the emperor of Russia. It has long been considered a corruption of the word Caesar, used by the emperors of Rome and the East, as Caesar Augustus. Modern scholarship is rather of the opinion, however, that the

word, czar or tsar, is of Tartar origin—a survival of the time when that people occupied eastern Europe. The czar was not only the arbitrary ruler of his people; but he was the sacred head of the Greek Church, the national church of Russia. See RUSSIA.

Czecho-Slovakia, chĕkō-slō-väk'ĭ-ä, a republic composed of the former Austrian states of Bohemia, Moravia, part of Silesia, and the district of Hungary known as Slovakia. Area, 52,000 square miles; population, about 13,000,000. There are sixteen districts subdivided into counties. The natural wealth is estimated at $15,000,000,000. The republic is very democratic. Suffrage is universal to both men and women in all departments of government. The court system of the old Austrian government has been embodied.

The people, called Czechs, are a western branch of the Slavonic race. They include the Moravians, the Slovacs of Hungary, and the Bohemians. They are allied to the Poles and to the Russians. In the day of John Huss and Jerome of Prague this element was one of the most prominent in central Europe, but persecution, exile, conquest, and oppression pretty effectually suppressed for a time rising intellectuality. The Czechs have a well developed language and quite a literature. The alphabet contains forty-two letters, and is more nearly phonetic than ours. Instead of borrowing, they make new words as they need them. They would be more apt for instance, to call a bicycle a two-wheel than to borrow a Greek word as we have done. The language is noted for subtle shades of distinction. A part of the instruction in the University of Prague is given in this tongue. Czech newspapers and books are multiplying. The literature is especially rich in folklore, song, and fiction. The Czech mind is gifted in scientific research. There are almost no illiterates. The school system is complete. There is a great university at Prague, and others are being established in Moravia and Slovakia.

The majority of the people are Roman Catholic, a small minority being Jewish or Protestant. Church and state are separate.

The republic has been recognized by the United States, by Great Britain, Italy, Japan, and France. It proclaimed its independence in October, 1918, and drafted its constitution in Switzerland a month later. At the request of the Allies the Czechs maintained four distinct armies fighting against different countries in the World War. See BOHEMIA; MORAVIA; AUSTRIA; PRAGUE; HUSS, JOHN.

D

Daddy-Long-Legs, an insect-like creature with exceedingly long, slender legs, closely related to the spider. Known also as harvestman and grandfather graybeard. The legs are very long and are bent up in the middle, so that the body sags down as though the legs were too weak to support it. When held by one leg the harvestman first points in this direction, then in that. Boys going after the cows catch a "daddy" to make him tell which way the cows have gone. He points first one way, then another, and is sure to hit on the right direction after a time. The daddy-long-legs has a disagreeable odor, but he lives on plant lice and is perfectly harmless. See SPIDER.

Daedalus, dĕd′a-lŭs, in Greek legend, an Athenian artisan and mechanician. He was credited with the execution of many notable works, temples, altars, etc. The Greeks claimed that he invented carpentry and many tools, such as the saw, axe, and gimlet. Daedalus was also a famous sculptor. He made a statue of Heracles so lifelike that it had to be tied to keep it from running away. He was regarded as the personification of art and handicrafts, and was worshiped by artists' guilds in various places. His nephew, Talos, showed some skill as an inventor. Daedalus became jealous of his talent and murdered him. For this deed he was driven to Crete. Here he built the famous labyrinth for King Minos. Later he lost the favor of Minos and was confined in a tower. He succeeded in escaping from confinement, but could not leave the island as the king had every vessel searched. "Minos may control land and sea, but not the air," said Daedalus. He then constructed a pair of wings for himself, and, finding he could use them successfully, made another pair for his son Icarus. When they had practiced flying enough to feel safe, they started over the sea. Daedalus crossed safely; but Icarus, exulting as he felt himself borne aloft by his wings, flew too high. The heat of the sun melted the wax which held the wings in place, and poor Icarus fell into the sea and was drowned. Daedalus reached Sicily in safety, where he was protected from the anger of Minos, and erected many famous works. See ARIADNE; LABYRINTH; MINOS; ICARUS.

Daffodil, a lily-like flowering herb belonging to the same family as the iris, or blue flag, and the blue-eyed grass. The flower scape springs from a bulb; the corolla is noticeable for a trumpet-shaped hood, rising in its center. Narcissus, the botanical name, includes daffodils and jonquils. The common daffodil is a meadow plant eighteen inches high, found from Sweden and England to Spain and Austria. Wordsworth's delight in the daffodil is worth a place here:

I wandered lonely as a cloud
That floats on high o'er vales and hills,
When all at once I saw a crowd,
A host of golden daffodils,—
Beside the lake, beneath the trees,
Fluttering, dancing in the breeze.

There are a large number of varieties of daffodils in cultivation. Among the more interesting is the hoop-petticoat daffodil, which has solitary, erect, yellow flowers. Another variety, the rush daffodil, has a short crown and slender, drooping tube.

Then the pied wind-flowers and the tulip tall,
And narcissi, the fairest among them all,
Who gaze on their eyes in the stream's recess,
Till they die of their own dear loveliness.
—Shelley.

Daguerreotype, dȧ-gĕr′o-tīp, a picture produced by the earliest process of photography. The method was described in 1837 by Daguerre of Paris, for whom the process was named. The lights and shadows of a figure were fixed by light rays on a copper plate, thinly coated with silver. The plate was first placed in a bath of iodine vapor to render it sensitive. Old-fashioned daguerreotypes may be found among family treasures. They differ from photographs

in that each exposure yielded one picture—a positive which could not be multiplied. To obtain six pictures it was necessary to sit six times. Daguerre was rewarded by the French government by membership in the Legion of Honor and a pension of $1,200. See PHOTOGRAPHY.

Dahlia, däl'yà, a genus of flowering herbs, remotely akin to sunflowers and asters, and closely related to the coreopsis and beggar's tick. There are several wild species, native to Mexico. The dahlia was named by Linnaeus for his student, Dr. Dahl. The original plant is said to be eight feet high, with a single row of dull scarlet rays and a yellow center. Florists now claim 2,000 varieties, mostly double, in every hue known to the horticultural show. The dahlia is raised generally from spindle-shaped tubers, of which the plant produces a cluster late in autumn. They need the same care as potatoes. The dahlia has been considered a coarse flower, but of late it is sharing the interest which has been shown in the chrysanthemum. One of the popular new forms has flowers not unlike a cactus, and is called the cactus variety.

Dairy. See CHEESE; MILK; BUTTER; Cow.

Daisy, a low, flowering plant allied to the aster. The word is a contraction of day's eye, in allusion to the sun-like flower. The common daisy is found in meadows and pastures throughout Europe. The leaves form a small rosette on the ground. The tiny scapes bear a flower each, though one cultivated variety, known as the "hen-and-chickens" has a central flower surrounded by a brood of a dozen small ones. On the approach of rain or nightfall the straps of the daisy curl up. It is a flower that "goes to bed with the sun, and with him rises weeping." The daisy is a favorite with the poets. Chaucer writes:

> To seen this floure agenst the sunne sprede
> Whan it riseth early by the morrow,
> That blissful sight softeneth all my sorrow.

and again,

> Of all the floures in the mede,
> Than love I most these floures white and rede,
> Soch that men callen daisies in our toun.

Milton, ere he lost his sight, rejoiced in

> Meadows trim with daisies pied.

In Scotland, the daisy is called the gowan; in Yorkshire, the bairnwort, or child's flower; in France, *la marguerite, i. e.* the pearl. In America, the daisy is a garden flower. It has escaped from cultivation in many sections. The name is applied also to the tall flowering plant known more appropriately as the fleabane. A genuine daisy, a hand's breadth high, grows wild in the Rocky Mountain region. The bitterness of the herbage makes the daisy unwelcome in pastures. All kinds of stock avoid it. It spreads rapidly and persistently by means of underground root-stocks, and competes with the grass for possession of the soil. To most farmers it becomes a pest, yet plowman Burns, climbing to his loft after a day's work, wrote:

> Wee, modest, crimson-tipped flow'r,
> Thou's met me in an evil hour;
> For I maun crush amang the stoure
> Thy slender stem;
> To spare thee now is past my pow'r,
> Thou bonnie gem.

Dakota, a former territory of the United States. See NORTH DAKOTA; SOUTH DAKOTA.

Dakota, a family of American Indians. In their day the Dakotas extended from the evergreen region of the Great Lakes to the Rocky Mountains. In numbers, mental qualities, and influence, the Dakotas may be ranked as inferior to the Algonquins and Iroquois only. They appear to be related to the now extinct Catawba Indians of the South and to the Assiniboins of Manitoba. They were called Sioux by the French, but their native name is as given. Six tribes are recognized: the Santee, Sisseton, Yankton, Wahpeton, Yanktonnai, and Teton. These again are subdivided into a number of bands, some of the more prominent of which are the Ogillallah, the Omaha, the Osage, the Winnebago, Mandan, and Crow. When settlers began to pour into the upper Mississippi Valley the Chippewas in the evergreen region and the Sioux of the prairie were hereditary enemies. The Chippewas were skilled in the use of the birch bark canoe; the Dakotas in the management of ponies, of which they maintained great droves. A piece of buffalo hide served for a saddle; a thong of the

same for a surcingle; a twisted rope of horsehair, lashed to the lower jaw, served for a bridle. The Dakota lodge or tepee consisted of buffalo skins upheld by lodge poles meeting at the top in the form of a cone. Parkman, the historian, visited them in 1847. We make room for two characteristic paragraphs:

> The buffalo supplies them with the necessaries of life; with habitations, food, clothing, beds, and fuel; strings for their bows, glue, thread, cordage, trail-ropes for their horses, coverings for their saddles, vessels to hold water, boats to cross streams, and the means of purchasing all that they want from the traders. When the buffalo are extinct, they too must dwindle away.
>
> . . . . . .
>
> The wild cavalcade that defiled with me down the gorges of the Black Hills, with its paint and war-plumes, fluttering trophies and savage embroidery, bows, arrows, lances, and shields, will never be seen again. The Indian of today, armed with a revolver and crowned with an old hat; cased, possibly, in trousers or muffled in a tawdry shirt, is an Indian still, but an Indian shorn of the picturesqueness which was his most conspicuous merit.

The later history of the Dakotas is that of other Indian tribes. First came white trappers and fur traders, then cessions of territory. Thousands of settlers thronged in driving away or exterminating game and forcing the Indians to retreat to more remote hunting grounds. The Dakotas were a warlike race and made at least two notable attempts to stem the tide of the invader. In 1862 Little Crow deemed the absence of the Great Father's young men in the Civil War a favorable opportunity. He organized a general outbreak in the valley of the Minnesota. Several hundred persons were massacred with frightful atrocities. The white troops appeared and the Indians fled to join their Western brethren. Of a number who surrendered themselves, thirty-eight were hanged from a single scaffold at Mankato. In 1876 the Dakotas made their last stand under Sitting Bull in the valley of the Little Big Horn in Montana.

Despite the attempts of the general government to care for the Dakotas on reservations, and really considerable payments in the form of cattle and money, their number has diminished steadily. The total Dakota population in the Dakotas, Nebraska, Montana, and Canada is said not to exceed 4,000. Various religious denominations have maintained missions with great faithfulness. The Bible has been translated into the Dakota language. On some of their reservations, particularly at Yankton, Pine Ridge, and Goodwill, churches and schools are maintained, and a considerable degree of civilization has been attained. The Dakota Indian Presbyterian Synod includes twenty-nine Indian churches and nearly 2,000 communicants, but for all that, even to the most ardent friend of the Dakotas, the outlook seems disheartening. Left to themselves, the Dakotas might prosper; but the whiskey and vice of the white man are too powerful for the weak red man.

The Dakota names of the months are of interest not only for themselves, but for the hints they give of former Indian life:

January—Hard month. Crusty snow, ice.
February—Raccoon month. On a bright day the raccoon comes out.
March—Sore-eyes month. The dazzling snow and the smoke of the tepees caused sore eyes, even blindness.
April—Goose-laying month. Wild geese arrive.
May—Planting month. The squaws plant corn.
June—Strawberry month. Named probably by the children.
July—Choke-cherry month.
August—Harvest month. Corn.
September—Rice-gathering month.
October—Deer month. After the fall of leaves.
November—When-deer-shed-antlers month.
December—Drying-corn month.

See INDIANS; CUSTER.

Dallas, the county seat of Dallas County, Texas. It is situated on the Trinity River about thirty-three miles from Fort Worth. In the midst of Texas' rich grain belt and served by five railroads, the city has important commercial and manufacturing interests. Among its numerous industries are cotton mills, grain elevators, flour mills, lumber and planing mills, foundries, machine shops, and nurseries. There are manufactories also of textiles, cotton-seed oil, saddlery and harness. Dallas is one of the largest distributing points of farm machinery and farm implements in the United States. The city has a number of parks and many fine buildings, among which may be mentioned the Roman Catholic Cathe-

dral of the Sacred Heart, a Protestant cathedral, a sanitarium, and a Carnegie library. There are many educational institutions, both public and private, including Dallas University, Southern Methodist University, and Baylor Medical College. The population of Dallas in 1910 was 92,104. By 1920 it reached 158,976.

Dalles, dalz, a French word meaning slabs of stone. The name was applied by the French employes of the Hudson Bay Company to a number of rapids where the water falls by low leaps from one bench of stone to another. It then became a general name for a series of rapids, as the Dalles of the Wisconsin, the Dalles of the St. Croix. The most noted dalles are those of the Columbia River, a region of rare scenic beauty. An Oregon city gets its name from them.

Dalton, John (1766-1844), a modest English chemist, known as the author of Dalton's Atomic Theory. For a time Dalton was an instructor in a college at Manchester. During the last forty years of his life he supported himself by taking private pupils at sixty cents an hour. At one time John, being about to revisit his native village, bethought himself that he would bring his Quaker mother a pair of fine silk stockings. He accordingly purchased a pair marked, "Newest fashion"; but his mother's remark, "Thou hast brought me a pair of grand hose, John; but what made thee fancy so light a color? I can never show myself at meeting in them," rather disconcerted him, as to his eyes the hose were of the orthodox drab color. His mother insisted that the stockings were "as red as a cherry." John's brother upheld the "drab" side of the dispute; so the neighbors were called in, and gave their decision that the hose were "varra fine stuff, but uncommon scarlety." Being convinced that he did not see colors well himself, Dalton investigated the question, and found that many people are unable to distinguish all colors; some being deficient as to pink, others as to scarlet, etc. This defect of vision, or color blindness, is often called Daltonism.

Dalton's reputation rests on two principles known as the Atomic Theory:

1. Every element is made up of atoms whose weight is constant.
2. Chemical compounds are formed by the union of the atoms of different elements in the simplest numerical proportions.

Interpreting these principles we say: Silver is an element, and is made up of atoms all alike, each having a weight that never changes. Water is a compound; two atoms of hydrogen unite with an atom of oxygen—never otherwise—to form a molecule of water. A molecule of water then weighs as much as two atoms of hydrogen and one atom of oxygen, never more, never less. The last statement seems self-evident, but it was not so in Dalton's day. Many yet held that heat had weight.

Dalton took some steps in establishing atomic weights. He took the weight of an atom of hydrogen, whatever that might be, as a basis; but he left the work unfinished, and it is incomplete at the present time. In deference to modern scholarship, we should add that there is evidence that even atoms consist of smaller portions of matter.

Damascus, capital of former Syria. In 1918 it was captured from the Turks by the British and is now a part of the new state of Palestine. It is called the oldest city in the world. Jerusalem, its neighbor on the southwest, is 150 miles away and 40 miles nearer the sea. Mecca, the sacred city, is 1,000 miles to the southward on the Medina road. Starting eastward by train from Beirut, the traveler ascends the Lebanon range, crosses the valley of the Upper Jordan, climbs a second range, and sees Damascus, a glittering panorama of mosques, palms, and minarets at his feet. One could not be in greater error than to imagine Damascus a tumbledown city in a desert. A mountain stream with a cold, swift, deep current, the Abana of Naaman, the leper (2 Kings, v: 12), rushes eastward into a plain which its waters have converted into a paradise. Three hundred square miles and a hundred more along the ancient Pharpar, watered by canal and pipes, are a veritable garden of fertility.

Damascus has been a western station of the great caravan trade from time im-

memorial, and is a busy city today. Bazaars,—narrow, roofed lanes lined with merchants' stalls, offer European clothes, Persian carpets, French ribbons and silks, Sheffield knives, Cashmere shawls, Mocha coffee, Dutch sugar, and Bagdad tobacco. The city manufactures swords, cloth, silks, cloaks, ornaments, guns, and household utensils. Five thousand hand looms clatter away; 10,000 people are engaged in weaving. Now that Damascus has a railway, a renewal of trade is growing up with the Arabs of the surrounding country, and several million dollars' worth of foreign goods are bought annually. The sights of Damascus are the swift river, the orchards, the bazaars, the khans, the mosques, and mansions with mud exteriors and open courts within. These courts are adorned with marble fountains, lemon trees, fragrant shrubs, and climbing vines. They are surrounded by apartments with marble floors, silk-cushioned divans, and ceilings in gilt arabesque. The city has a population of about 150,000, chiefly followers of Mohammed. About 16,000 Christians and 6,000 Jews are tolerated, but they are required to live in their own quarters. Once a year a great caravan convenes to visit the tomb of the prophet at Mecca, and to do a little trading at the Mecca fair. Railroad connections are cutting off this business; but the faithful still gather at Damascus for a four months' pilgrimage. Their setting out and their return are times of pomp and holiday.

The early prominence of Damascus as a manufacturing town and a business center may be inferred from several words well fixed in our vocabulary. A Damascus blade is a sword of the finest temper known. Damascus steel is still a name for steel of a peculiar twist and toughness. Damask linen is the type of perfection for beautiful linens with woven figures. For damson plums we are indebted also to Damascus.

On their return to Europe the Crusaders brought home many valuable ideas from Damascus. Damascus is now getting ideas in return from the western nations. A recent consular report gives an interesting account of a modern American steam threshing rig: Its recent triumphal march through Damascus stirred the "White City of the East" from center to circumference. On its way into the country it broke down bridges innumerable, but pulled itself and train out of the creek beds beautifully. It had the honor of being started on its pioneer career in the presence of the governor-general of the province, the field marshal in command of the fifth army corps, and many other gentlemen of high station in Ottoman civil and military life. With its self-feeder, automatic bagger, straw stacker, etc., it is a marvel of ingenuity, and its service to this country, in blazing the way for labor-saving machinery, with its accompanying amelioration of industrial and social conditions, in a region east of Mount Hermon, where people live and work as did their forefathers when Abraham crossed their pastures with his Chaldean flocks, is beyond estimation.

See ASIA MINOR; SYRIA; TURKEY; CRUSADES; WINDMILL.

Damask, specifically, a twilled linen fabric, plain or figured, in use for tablecloths and table napkins, centerpieces, doilies, etc. The name damask designates the weave, rather than the material. The lustrous quality of all damask is due partly to what is known as the satin weave, which means that the warp is brought to the surface to a greater extent than in plain weave. A weft thread, for instance, may pass under sixteen warp threads, over one, under sixteen, and over one again. In figured damask, this is, of course, more or less interrupted by the pattern.

The figures of the pattern are produced by bringing the warp threads to the surface in groups, allowing them to be skipped by the weft threads, according to a regular design. The warp and woof threads thus lie at right angles to each other on the surface of the material, in more or less broad groups. The play of light upon the fabric defines the pattern from the ground. In a plain color, the angle at which the light strikes the surface determines whether the pattern appears lustrous and the ground dull, or the pattern dull and the ground lustrous.

Originally damask was a silken fabric. It was woven in colors, as well as plain, and sometimes with gold and silver threads. The weaver used a draw loom,—so called from the fact that certain of the warp threads must be drawn up to allow the weft threads to skip them. This was

done by hand, cords being attached to the separate warp threads. Often the weaver had a boy to assist in drawing these threads. From this the contrivance was sometimes called the "draw-boy loom." The draw loom originated, it is thought, in China, where the village weaver still weaves damask silk on a rude contrivance that may well have been the forerunner of the modern damask loom. The Hindus were celebrated for their damasks. Babylon became a weaving center. At one time a Babylonish garment had the reputation in the oriental world that Parisian gowns now have in modern society. A knowledge of the draw loom was one of the numerous bits of knowledge brought back to Europe by the Crusaders. During the Middle Ages the great artists of France, Germany, and the Netherlands considered it by no means beneath their dignity to contribute original, and, it is needless to say, beautiful designs for damasks. The Jacquard loom has superseded the draw-loom, performing automatically operations formerly requiring great skill and patience. This has materially lowered the cost of damask linens.

The name, damask, is from Damascus, Syria. The silk weavers of this city attained so great perfection in the manufacture of this textile that the name was given to the fabric without regard to the place of its production. Since the sixteenth century, this name has come to be applied to any material woven after the manner of the first damask, but at present, if used with no qualifying word, damask implies a linen material.

Linen damask is known as "double" or "single," according to the number of threads brought to the surface in a group, in applying the "satin" principle of weaving. In double damask eight threads to one "tied down" appear; in single damask four threads to one tied down. In double damask the finest grades of linen are used, and the work is usually done on hand-looms. The terms double and single came probably from the fact that in double damask the pattern is almost equally distinct on the two sides. Coarse linens would not look well woven "double," as the quality of the thread would be too conspicuous.

The linens of Ireland, Scotland, Germany, and Austria are all notable for the beauty of the material and weave. French linen is probably the best of all, its fineness, beauty of design, and superior "satin" effects making it especially desirable, but very expensive.

See SATIN; TWILL.

Dame Durden, in an old English song, a famous housewife. In Dickens' *Bleak House* the careful and conscientious Esther Summerson is affectionately called "Dame Durden" by Mr. Jarndyce, owner of "Bleak House."

Damien, da'mi-en, **Father,** a Belgian priest noted for self-sacrificing missionary work in the Hawaiian Islands. In order to stamp out leprosy the government of these islands requires all lepers to retire to the little island of Molokai as soon as the first sign of leprosy is seen. Even young mothers are obliged to leave their homes and children. No return is permitted; no further intercourse with relatives is possible. As leprosy eats away the extremities of the body first, and creeps toward the vital organs slowly, these unfortunate wretches drag their rotting limbs about for years, it may be, before death comes to their relief. This young priest was so stirred by the misery of the exiled colony, several hundred in number, that he cut himself off from the outside world and went into voluntary residence among them. From 1877 until the time of his death, twelve years later, he toiled heroically, feeding the hungry, dressing loathsome wounds, comforting the dying, and burying the dead. From the very nature of his work Father Damien knew he would become a leper sooner or later. After eight years at Molokai spots of leprosy appeared on his hands and feet. He was a doomed man. At his death a bishop-missionary, resident in Honolulu, the capital city of the islands, wrote a note to a friend belittling the priest's work, defaming his character, and styling him a "coarse, dirty, bigoted, headstrong man." This letter was published in the *Sydney Presbyterian*, October 26, 1889, and fell into the hands of Robert Louis Stevenson, who was well acquainted with the facts. Stevenson was indignant, and addressed the

bishop an open letter, since published under the title of *Father Damien*, in which he contrasts the luxury, sloth, and jealousy of the bishop with the poverty, toil, and sacrifice of the priest. This remarkable article is one of the keenest pieces of invective in the English language. The prominence of the writer, the merit of the topic, and the skill of the writing render the incident one of note. The services and the self-sacrifice of Father Damien are commemorated in an imperishable bit of literature and cannot now be forgotten. See LEPROSY.

Damocles, a courtier of Dionysius, the tyrant of Syracuse. He lived in the first half of the fourth century before Christ. He had so much to say of the grandeur and happiness of kings, and was so given to flattery, that Dionysius prepared a surprise for him. Inviting him to sup, and placing him in a royal seat, he caused him to look upward in the very midst of the hilarity to behold a keen sword suspended above his head by a single hair. This quite altered Damocles' view of royal life, and gave him a sudden sense of the apprehension of danger under which rulers live. An allusion to the sword of Damocles is a well worn figure used to denote an impending danger that takes away the power of present enjoyment. See DIONYSIUS.

Damon and Pythias, or **Phintias,** two noble citizens of Syracuse, noted for their supreme friendship. Phintias, having incurred the displeasure of the tyrant Dionysius, was condemned to die. He begged to be allowed to go home to put his affairs in order. This was agreed to, Damon taking his place in prison. In some way Phintias was delayed. In spite of the jeers of the populace Damon defended his friend's absence with the utmost confidence in his fidelity. Phintias arrived just as Damon was being led out to die in his place. He cast himself into his friend's arms, demanding the latter's instant release and his own execution. Each begged to die for the other. The tyrant was so affected by this constancy that he set them both free, and asked to become a third in their fellowship. The friendship of these two has been the subject of many an allusion and the theme of the drama in more than one language.

Damps, a name given to certain poisonous gases formed in mines. Miners distinguish two kinds—choke damp and fire damp. Choke damp is composed largely of carbonic acid gas, and is found in the lowest levels. It will extinguish the flame of a candle. No one can live in it for a long time. Fire damp also contains carbon, combined with hydrogen and mixed with atmospheric air. It explodes in contact with a flame. Miners going to their work with lighted candles or lamps not infrequently run into fire damp before they are aware of it. Violent explosions result in the death of many men. As early as 1815 Sir Humphry Davy invented a safety lamp which consisted essentially of a cylinder of wire gauze surrounding the flame. Fire damp passes through the meshes of the gauze and burns within with a feeble blue flame. The flame of the lamp cannot pass out through the gauze without being cooled to such a degree that it cannot ignite the dangerous gases. See DAVY, SIR HUMPHRY; SAFETY LAMP.

Damrosch, däm′rŏsh, **Leopold** (1832-1885), a Prussian musician. He was educated at the University of Berlin for the practice of medicine, but finding music more to his taste devoted his time to it, and in 1855 became a concert violinist. After filling the position of orchestra director in Posen and Breslau, Prussia, he came to New York in 1871, becoming director of the Arion Society. In 1884 he succeeded in introducing German opera in New York City. Damrosch contributed to musical magazines, and produced many songs, concertos and cantatas. These compositions are meritorious but are not the work of genius.

Damrosch, Walter Johannes, son of Leopold, was born in Germany, and in 1862 came to America with his father. He also became a musician, conducted symphony societies in New York, and in 1900 became conductor of the New York Philharmonic Orchestra, one of the leading organizations of its kind in America. He is the author of various musical compositions.

Damson, a variety of the common domestic plum or prune. It is known also as the Damascus plum; in fact, damson is a contraction of the adjective damascene, meaning of Damascus. This plum is supposed to have been brought to western Europe by the Crusaders returning from the East. It was introduced from England into America. The fruit is a small, black, dark bluish, or purple plum. The damson is surpassed by other plums for table use; but it is prized by housewives for preserves. The fruit in its native state has a puckery taste; but when cooked, it makes jams, marmalades, and the richest of preserves. See PLUM; DAMASCUS.

Dana, Charles A. (1819-1897), an eminent American journalist. He received his education at Harvard. He became a member of the famous Brook Farm Community, and was associated with George Ripley and Parke Godwin in the editorship of the *Harbinger.* In 1847 he was made managing editor of the New York *Tribune,* a position which he held up to the time of the Civil War. In the meanwhile he colabored with Ripley in projecting and editing *Appleton's American Encyclopedia* in sixteen volumes. During the Civil War he was for a time assistant secretary of war. His was a busy, useful life, but he is remembered chiefly as editor of the New York *Sun* from 1868 onward. He belongs to the group of noted New York editors, including Greeley and Bryant. His editorials were noted for brilliancy; but toward the end he fell into a bitter partisan, pessimistic vein, seeming to think the world going wholly wrong. He failed on that account to retain his influence.

Dana, James Dwight (1813-1895), an eminent American geologist. He was born at Utica, New York. He was graduated at Yale in 1833. In 1838 the United States government sent an expedition under Lieutenant Wilkes to explore and survey the southern seas. Mr. Dana was fortunate enough to be appointed the official mineralogist and geologist. Later he became Silliman professor of natural history and geology at Yale. Professor Dana contributed many articles to scientific journals. He was the author, also, of a number of textbooks, including a *Manual of Geology, Textbook of Geology, The Geological Story Briefly Told,* and *Manual of Mineralogy.* He also wrote a volume on *Coral Reefs and Islands.* He applied the term "Archaean" to the oldest rocks and proposed that the Archaean Age be recognized as the earliest geologic period. His classification has been adopted very generally by American geologists.

Danaë, dān′ā-ē, in Greek mythology, daughter of Acrisius, king of Argos. Acrisius had been warned by an oracle that his daughter's child would cause his death. To avoid the fulfillment of this prophecy he decided to prevent his daughter's marriage, and therefore shut her up in a brazen tower built for this express purpose. But Zeus was more powerful than Acrisius. He had seen and admired the beautiful Danaë. Now he changed himself into a shower of gold, and in this form shone into the tower and wooed the captive. Perseus, destined to become the hero of many famous adventures, was the son of Zeus and Danaë. Acrisius put child and mother into a chest, and sent the chest floating on the sea. It was wafted to the shores of the island of Seriphus, where it became entangled in a fisherman's net. The fisherman opened the chest, took Danaë and the infant to his own home, and there Perseus grew to manhood. Danaë has been a favorite subject with artists. She is usually pictured in her tower with the golden shower falling about her. In a celebrated painting by Corregio, Cupid holds a fold of drapery across Danaë's knees to catch the golden shower. See PERSEUS.

Danaides, da-nā′i-dēz, in Greek legend, the fifty daughters of Danaus. They accompanied their father to Argos, but were followed thither by the fifty sons of Aegyptus, who sought them in marriage. The father consented to the marriage, but provided each daughter with a dagger, commanding her to murder her husband. They all obeyed except Hypermnestra, who allowed Lynceus, her husband, to escape. The Danaides were purified from their crimes by order of Zeus. Nevertheless, so the legend runs, they were punished for it

after death, for in Hades they were doomed to draw water in sieves forever. See DANAUS.

Danaus, dān'a-ŭs, in Greek legend, a grandson of Poseidon. He was the founder and king of Argos. According to the legend, he was a native of Chemnis in Upper Egypt. Fearing that his brother Aegyptus and his sons were in league against him, Danaus with his fifty daughters left his native land and, after various adventures, settled in Greece, becoming king of Argos. See DANAIDES.

Danbury News Man, The, a sobriquet of James Montgomery Bailey, an American humorist and editor. He was born in Albany, New York, in 1841, and died in Danbury, Connecticut, 1894. He founded the *Danbury News* and was its editor for years. His jests and humorous articles were widely quoted. He wrote *Life in Danbury, Danbury News Man's Almanac, They All Do It,* and *The Danbury Boom.*

Dance of Death, a grotesque representation in which the figure of Death takes the lead, followed by dancers of all ages and conditions. The Dance of Death had its origin in Germany in the fourteenth century. It was, in this first instance, a sort of morality play consisting of dialogues between Death and his followers. It was presented by a religious order with the purpose of reminding the living that death had power to wreck all human plans. The presentation was repeated in France. It became extremely popular, not only in Germany and France, but in Spain and England. It seemed to possess a wonderful fascination. Artists soon took up the idea. The Dance of Death was presented in every conceivable way,—in paintings, in tapestry, and in bas relief. Poems were written describing different figures and scenes. Monastery walls and churchyard walls were painted more or less elaborately with these groups. A famous Dance of Death was painted in fresco on the walls of the churchyard in the suburb of St. John at Basel, which has been entirely destroyed. It represented Death summoning to the dance persons of all ranks from pope to beggar. It contained about sixty life-sized figures. Rhymes explained different scenes in the dance. The celebrated Hans Holbein produced fifty-three sketches for engravings suggested by the Dance of Death. The figures are independent—not arranged as a dance. Death is represented beside the "judge on his bench, the priest in his pulpit, the nun in her cell, the doctor in his study, the bride and the beggar, the king and the infant." The original drawings are at St. Petersburg.

Dancing, stepping to music in a gliding or lively fashion. It is believed that dancing of some sort is practiced by all peoples. Among the Mohammedans, the Hindus, the North American Indians, and many races, the dance is a religious exercise. Thus we hear of the war dance, the rain dance, the ghost dance, the medicine dance, the buffalo dance, and many others. The Greeks danced in honor of their gods and in their gymnastic exercises. King David danced before the Ark of the Covenant, but the Romans deemed it undignified for a man to dance. The English Cavaliers and the Virginians danced, but the Puritans of England and the New England colonists deemed dancing a sin. Many families and churches still frown on the practice—especially dancing in a promiscuous assembly of strangers. Of modern nations, those of southern Europe are the more famous for dancing. The fandango is a rustic Spanish dance; the minuet and quadrille are French; the galop, German; the polka, Hungarian; the waltz, Bavarian; the schottische, Bohemian; the reel, fling, and strathspey are Scottish; the breakdown is African; the jig, Irish; and the ballet, a pantomime dance, is thought to be Roman. See PURITAN.

Dandelion, a common perennial herb of the composite family. From the toothed appearance of the leaves, the French gave it the name *dent de lion,* whence our name. It appears to grow wild over Asia and Europe. It came to this country with garden seeds, yet seems to be a native of the Rocky Mountains. Children make garlands of its blossoms; the wind makes playthings of its seed; the housewife uses its leaves for greens; the farmer execrates it in his meadows; people who move into a new country long for its face; and the

poet—each person looking at the dandelion in his own way—says:

Dear common flower, that grow'st beside the way,
Fringing the dusty road with harmless gold,
First pledge of blithesome May,
Which children pluck, and, full of pride uphold,
High hearted buccaneers, o'erjoyed that they
An Eldorado in the grass have found,
Which not the rich earth's ample round
May match in wealth, thou art more dear to me,
Than all the prouder summer-blooms may be.
—Lowell, *To the Dandelion*

Daniel, one of the Old Testament prophets supposed commonly to have been the author of the book of Daniel, although certain critics believe that work to have been produced by some unknown writer at a much later period. When, in 605 B. C. Nebuchadnezzar, King of Babylon, besieged Jerusalem for the first time, Daniel, a Hebrew youth of a distinguished family, was carried with other captives to Babylon. The book of Daniel tells the story of the conscientious youth, and of his education and life at the Babylonian court, of his utter obedience to the law in which he had been trained, and of his absolute faith in the God of his fathers. The story of Daniel in the lion's den and of his three friends, Shadrach, Meshach and Abednego in the fiery furnace are familiar. Daniel's triumphant faith, his strength of character, his rare abilities as a man, and his power and boldness in his dealings with the king won the favor of Nebuchadnezzar, who honored him and "made him ruler over the whole province of Babylon and chief of the governors over all the wise men of Babylon." The prophetic visions of Daniel are recorded in the last six chapters of the book that bears his name.

Daniell, John F. (1790-1845), an English scientist. Born in London. Professor of chemistry in King's College, London, 1831. Daniell invented the first form of electric battery by which a steady current could be obtained for a considerable length of time. The Daniell cell consists of a copper plate immersed in a solution of copper sulphate in an outer glass jar, and a zinc plate immersed in sulphuric acid in an inner porous cup. The gravity cell used in telegraph stations is a modification of Daniell's, which dispenses with the porous cup. Daniell's *Meteorological Essays* was the first attempt made to account for all the then known phenomena of the atmosphere. He also published an essay on *Artificial Climate.* The Royal Society conferred upon him all of the medals, *viz.,* three, which they had at their disposal.

Danish Literature. See LITERATURE.

Dante, dăn'te, **Alighieri** (1265-1321), the most eminent Italian poet. He was born at Florence and died at Ravenna. His mother was a widow of some means and social standing, able, it appears, to give him a liberal education at Bologna, Padua, Naples, Paris, and Oxford, the leading universities of that early day. He preceded Raphael and Michelangelo by two centuries, and Shakespeare by three. In his early manhood he participated in the civil discord and factional wars which drenched the streets of his native city in blood. He was married to a lady of rank, and had seven children. About 1302 his property was confiscated and he was banished from Florence to wander a beggar.

When a mere youth he fell in love with a beautiful girl named Beatrice, whose early death left him to mourn. When banishment from his beautiful home and beggary came upon him, he settled into melancholy and wrote his *Divine Comedy.* In this poem, the greatest literature of the Middle Ages, Dante represents himself as traveling through hell and purgatory and heaven. The shade of Virgil conducts him through the dark portal, over which was written "All hope abandon, ye who enter here," into the Inferno, the region of the damned. One of the most impressive parts of the poem is a brief description of the world's great criminals undergoing torture there. From the Inferno Dante is conducted upward to Purgatory, a mountain rising in midocean, on the opposite side of the globe. Ascending from terrace to terrace, where mortals are undergoing endurable and temporary punishment preparatory to final happiness, they reach at last the top of Purgatory, where they are stayed by a sheet of flame. Here Dante's conductor bids him farewell, telling him that Beatrice is on the other side. He

plunges boldly through and comes out in a paradise of forests, flowers, soft zephyrs, fountains, songs of birds, and music. Beatrice, divinely radiant, more beautiful even than the Beatrice of his grief, guides him from scene to scene, bidding him look back now upon earth, indescribably mean and insignificant in the dark and gloomy distance. Amid the softest melody they move ever upward, entering circle within circle, until they come before the Great Throne, in whose presence all eyes are fixed on the triumphant Redeemer, forgetful of self and forgetful of the sorrows and ills of earth, mindful only of Him who is the source of light and love. Here closes the Divine Comedy, "one of the greatest monuments of human genius." Boccaccio, a friend who knew Dante well, has left the following description:

> Our poet was of middle height; his face was long, his nose aquiline, his jaw large, and his under lip protruding somewhat beyond the upper. His eyes rather large than small; his hair and beard thick, crisp, and black, and his countenance sad and pensive. His gait was grave and gentlemanlike, and his bearing, in public or private, wonderfully composed and polished. In meat and drink he was most temperate. Seldom did he speak unless spoken to, though he was most eloquent. In his youth he delighted in music and singing, and was intimate with all the musicians and singers of the day. He was of marvelous capacity and the most tenacious memory; inclined to solitude and fond of study when he had time for it.

Danton, George Jacques (1759-1794), a leader of the French Revolution. He is described as a man of gigantic stature, with a voice that fairly shook the dome of the Assembly with its roar. He speedily became one of the small circle that brought Louis XVI, Queen Marie Antoinette, and scores of royalists to the guillotine. When the Prussians invaded France, Danton's courage saved the day. He and Robespierre fell out and distrusted each other. Each sought the other's downfall. Danton was arrested on a charge of conniving to bring back the royal family. He went stoutly to the fate to which he had condemned others. He gloried to the last in his part in the revolution. He gave expression to two regrets; one that he had been outwitted by Robespierre, the other that he should never see his wife again. See ROBESPIERRE; FRENCH REVOLUTION.

Danube, the second river of Europe. It rises in the Black Forest, flows through southern Germany, across the fertile plains of Austria-Hungary, through the famous Iron Gate of the Danube, and on to the Black Sea. Its course is 1,750 miles as the crow flies, or 2,000 miles of delightful windings by forest, vineyard, and field, at the foot of castled crags, by old Ulm, past the canals of imperial Vienna, beneath the bridges of Budapest, and under the white walls of high Belgrade, until lost in the vast lowlands at its mouth. It passes five capital cities. In its course it receives 500 affluents. In volume it is the chief river of Europe. It carries 67,000,000 feet of earth to the Black Sea annually. It has advanced its delta ten miles since the day of Roman occupation. Immense sums of money have been expended in removing rock from the channel and in deepening the mouth. Navigation is open by treaty to the ships of all nations. Large steamers ply on the lower course. Flat-bottomed, shallow-draft boats ascend as far as Ulm. Sixty tributaries are navigable. Though not so celebrated in story and in song as the Rhine, the "Blue Danube" is one of the picturesque rivers of the world, especially in that part of its course above Belgrade known as the Iron Gate, where mountains press in on either hand. The Danube was for many decades the boundary of the Roman Empire. It has seen its full share of the noted events of European history.

Danville, Illinois, the county seat of Vermillion County, is a flourishing city located on the Vermillion River, 120 miles south of Chicago. The most important industry is the mining and shipment of coal but the city also contains iron foundries, planing mills, woolen mills, glass works, brick yards, organ factories, furniture factories and carriage and wagon works. It is reached by several steam railroads and electric traction lines, and contains the car and machine shops of one of the railroads. A national soldier's home is located here and it also contains a first class High School, several

churches, a Carnegie Library, a Young Men's Christian Association Building and many fine business blocks. The population in 1900 was 16,354 but in 1920 had increased to 33,750.

Danzig, or Dantzic, or Dantsic, formerly a commercial city of Prussia, on the Vistula River, three miles from the Baltic Sea; now a free city under the guarantee of the League of Nations, the actual boundaries of the city to be determined by a commission representing Germany, Poland, the Allies and Associated Powers. Previous to 1793 it was Polish territory. In early days it was one of the four leading cities of the Hanseatic League, and had a large overland trade by packhorses and flatboats with the caravan routes of Asia. The goods thus obtained were conveyed westward by way of the Baltic. It is now a fairly prosperous town of 160,000 inhabitants, with a large export trade in lumber, beet sugar, and grain. The grain warehouses rival those of Buffalo. It is the chief source of the supply of amber and amber ornaments. Ships are built here. There are also large mills, breweries, cordage works, and paper mills. It is a strongly fortified military post. It is still surrounded by its old walls and preserves its medieval appearance. The principal edifice of interest is the cathedral. Its massive tower is 248 feet high. The bell weighs six tons. A beautiful vaulted interior is supported on twenty-eight pillars. A fine city hall dates from the fourteenth century. Its beautiful slender spire contains one of the sweetest chimes in Europe. The houses are chiefly of brick and sandstone, set gable end toward the street. The narrow streets, lined with lofty, richly decorated gables, have an antiquated look. See HANSEATIC LEAGUE.

Darby and Joan, där'by and jōn, a married couple, John Darby and wife, said to have lived in the eighteenth century in the village of Healaugh, in the West Riding of Yorkshire. They were famous for a long and happy married life. The couple were celebrated in a ballad called "The Happy Old Couple," by Henry Woodfall. The names are sometimes used figuratively to describe a peaceful but uneventful married life.

Dardanelles, där-da-nĕlz', the Hellespont of the ancients, a narrow strait connecting the Sea of Marmora with the Mediterranean and separating Europe from Asia. It is forty miles in length and from one to four in width. A swift current runs westward at all seasons of the year. Xerxes, the Persian, led his host across the Hellespont by means of two bridges, resting on boats. According to Herodotus the bridges groaned beneath the living tide of Asiatics for seven days and nights. In 1811 the poet Byron swam across from Abydos to Sestos in a little over an hour.

The strait belonged to Turkey. In 1841, 1856, and 1878, the powers agreed that warships should not be allowed to pass the Dardanelles, which could be likened to a style with Europe on the one side and Asia on the other. In the Great War, to obtain control of the strait was a prime objective on both sides. That is why Turkey was so important in the conflict. A campaign waged against the fortification for over a year was non-decisive and the passage was open to the Allies only after the capitulation of Turkey. See CONSTANTINOPLE.

Darien, dā're-ĕn, a gulf forming the most southwesterly extension of the Caribbean Sea. The isthmus, extending from Colombia to Central America, is now known by the name of Panama.

Darius, the title of several Persian monarchs. It is not a personal name, but is akin in meaning to emperor, pharaoh, czar, and caesar. Darius I was one of the greatest Persian kings. He ruled 521-486 B. C. He organized the great Persian empire by dividing it into twenty provinces. Each province was ruled by a satrap. In order that the satrap might not have the means to set up an independent kingdom, the military force of the province was placed in charge of a commander, who reported to Darius independently. In each province a royal secretary, called the king's ear, sent letter after letter by special messenger, reporting on the state of affairs; and finally a royal commissioner, a sort of inspector, called the king's eye, appeared now and then with a military escort to see that all was going well. A complete system of taxgathering was established. Ex-

cellent post roads were built, along which couriers, peasants and their donkeys, endless caravans, and armies might pass. The longest—the east and west road from Sardis to Susa—was 1,500 miles in length. Babylon attempted to revolt, but in vain. The empire was reduced to order in every direction. The first great work of Darius may be summarized as the most perfectly organized Asiatic government the world has ever seen. It was essentially the form of government of the Turkish Empire today.

His second service was the repulse of the barbarian tribes of the north. Just what these were, whether Hun, Turk, or Tartar, no one knows. Under the name of Scythians, they had pushed their way repeatedly into the heart of western Asia—some authorities say even as far as Egypt. Darius led immense armies against them and set up stone pillars to mark the boundaries within which they were forbidden to enter. Following the subjugation of Babylon this great king led an immense host across the Bosporus on a bridge of boats, to attack the Scythians in the southern steppes of what is now Russia. Thrace was added to the empire, thus bringing Persia within Europe to the very foot of the mountain barriers of Greece. Nevertheless the barbarians were effectually checked and repulsed from the frontier of civilization.

The third great enterprise of Darius ended in disaster. Persian arms had annexed India as far as the Indus. The Mediterranean coast was now Persian from the Nile to the mountains of Thessaly. The Aegean Sea, the center of Greek activity, was practically "a Persian lake." Whether or not Darius had a previous intention of attacking Greece is not known, but the Greek cities on the coast of Asia Minor revolted. Darius reduced them with fire and sword, and in 492 B. C. sent an army and a fleet under Mardonius to subjugate the Greeks. The barbarians of Thrace mishandled his army and a storm off Mount Athos wrecked his ships. In rage he sent messengers to the Greek cities to demand earth and water, the symbols of submission. Many of the weaker cities complied. Athens and Sparta threw the envoys into pits and wells and told them to help themselves to all the earth and water they cared for. The story of the great king's discomfiture may be read under MARATHON.

Dark Ages, a name given to the fifth, sixth, seventh, and eighth centuries. During the early part of this period the civilization of the Romans was overturned by invasions of Franks, Goths, and other tribes. Schools became almost extinct. Rulers cared little for learning; literature, save among the monks, was a forgotten subject. For centuries it seemed as though the western world forgot faster than it learned. Students in particular bewail the loss of many art treasures destroyed by the rude soldiers of the north rather through ignorance than through malice. See CHARLEMAGNE.

Darling, Grace Horsley (1815-1842), an English girl celebrated for her heroism in saving passengers from a wrecked steamer. She was born in Northumberland. Her father, William Darling, was keeper of a lighthouse on Long Stone, one of the Farne Islands. The event which made her famous occurred in September, 1838. Very early one morning the lighthouse keeper descried the wreck of a vessel, which proved to be the Forfarshire. Although a brave man and accustomed to scenes of danger, he hesitated to make any effort to save the passengers, such was the peril of the undertaking. Grace, however, aroused by sympathy for the survivors whom she could discern through the glass, urged her father to attempt a rescue and persuaded him to allow her to aid him. They made two trips and brought nine persons, all who had not previously perished, to the lighthouse in safety. The story of the young girl's courage led English people to collect for her a purse of money amounting to about $3,500.

Darlington, William (1782-1863), an American botanist. A native of Chester County, Pennsylvania. A practicing physician, member of Congress, 1815, and a banker. An enthusiastic collector and organizer of natural history societies. He wrote a *Flora of Chester County, Memorials of John Bartram and Humphrey*

Marshall, and an *Agricultural Botany.* Dr. Darlington corresponded with eminent botanists of Europe; among others, De Candolle, to whom he sent many specimens at the Paris Garden of Plants. De Candolle honored the enthusiastic doctor by naming the pitcher plant of California, "Darlingtonia."

Darnley. See MARY QUEEN OF SCOTS.

Darter. See ANHINGA.

Darters, a group of small fishes, one to eight inches long, related to the perch. The smallest American species and one of the smallest of fishes, one to one and one-half inches in length, lives in the gravel bottoms of running streams from Minnesota to Indiana. Dr. S. A. Forbes writes: "Given a supply of certain kinds of food nearly inaccessible to the ordinary fish, it is to be expected that some fishes will become especially fitted for its utilization. These darters are the mountaineers among fishes. Forced from the populous and fertile valleys of the river beds and lake bottoms, they have taken refuge from their enemies in the rocky highlands, where the free waters play in ceaseless torrents, and there they have wrested from stubborn nature a meager living. Although diminished in size by their constant struggle with the elements, they have developed an activity and hardihood, a vigor of life and a glow of high color, almost unknown among the easier livers of the lower lands. Notwithstanding their trivial size, they do not seem to be dwarfed so much as concentrated fishes." Jordan adds, "Their colors are often very brilliant, the males of some species being among the most brilliant fishes known. The sexes are usually unlike; the females being generally dull and speckled. They usually prefer clear running water, where they lie on the bottom concealed under stones, darting, when frightened or hungry, with great velocity for a short distance, by a movement of the large pectorals, then stopping as suddenly. They rarely leave the bottom, and are never seen suspended in the water. A few species prefer a sandy bottom, where they lie buried in the sand, with only one eye visible. The darters feed chiefly on the larvae of flies. The largest reach a length of eight inches, but the average is about two and one-half inches." See FISH.

Dartmoor, an elevated tableland and royal forest in Devonshire, England. The forest contains about 400 square miles. The moor lies about 2,000 feet above the sea, and is bleak, but affords pasturage and peat cuttings. Some of the peat beds are 20 feet deep. Many of the ravines are fertile, and afford fine trout fishing. Dartmoor is noted for a number of prehistoric ruins. A large number of American sailors and soldiers were confined in Dartmoor prison during the Revolutionary War. A number were shot in an attempt to get away after rumors of peace had been heard. This unfortunate event has been stigmatized as the "Dartmoor Massacre." The inclosure embraces about thirty acres. It is surrounded by two high stone walls, and is now in use as a convict prison. See ENGLAND.

Dartmouth (därt'muth) **College,** one of the earliest seats of learning in New England. It grew out of a school at Lebanon, Connecticut, for Indian boys. With $50,000 raised in England and a grant of 44,000 acres of land, the school was moved to Hanover, New Hampshire. In 1770 Eleazer Wheelock became the first president. The college was named for Lord Dartmouth, one of the liberal donors of money. The college has always been governed by a board of twelve trustees, acting under a charter granted by George III. In 1816 the state undertook to control the institution. The trustees brought suit. Daniel Webster carried the famous case from court to court, obtaining finally a decision from no less a jurist than Chief Justice Marshall, sustaining the inviolability of the royal charter, and leaving Dartmouth in the hands of the old trustees. Modern opinion runs to the effect that the decision is based largely on sentiment. The college occupies a beautiful site near the bank of the Connecticut. Buildings, new and old, and fine avenues of elms give an air of refinement to the grounds. The college is open to men only. In addition to the traditional classical school there are schools of science, medicine, and civil engineering. The present value of the prop-

erty is between three and four millions. There are about seventy professors, and well on toward a thousand students. A host of distinguished graduates have taken a part in the affairs of New England and in the empire building of the West.

Darwin, Charles Robert (1809-1882), an English scientist. He was a native of Shrewsbury. He was born on the same day as Abraham Lincoln. His father was an eminent physician. His grandfather, Erasmus Darwin, was the author of a number of botanical works of an inquiring nature. Darwin was educated at the universities of Edinburgh and Cambridge. At the age of twenty-two he received an appointment as naturalist on board the surveying ship Beagle, then about to be sent out by the British government on a voyage of exploration. This appointment was just what Darwin wanted. It determined his life work. The Beagle spent five years in circumnavigating the globe. Darwin returned with an immense store of specimens. Among his writings which resulted from the trip are his *Journal of Researches, Zoölogy of the Voyage, Structure of Coral Reefs, Volcanic Islands,* and *Geological Observations.* These give him a reputable standing as a man of science.

Among questions agitating men of science at that time was that of species. Are we, for instance, to consider the Shetland pony and the Norman draught horse as descendants of a common wild ancestor, or do they represent two distinct acts of creation?

Various appointments and sources of revenue permitted Darwin to retire to a quiet country residence where he carried on a series of experiments with pigeons, extending through a number of years. He chose the pigeon because it is possible to breed a great many successive generations in a short time. A pair of pigeons will have great grandchildren before the season is over. Now the pouter pigeon is famous for an ability to puff out the neck until it looks larger than the body. By selecting a pair of pouters, that lacked somewhat in the power of swelling the neck, and choosing from their young a pair that had still less of this power, and from the grandchildren a pair with still less again, he was able to breed pigeons that were not pouters. In the same way other strains, as fantails, were bred back and back toward a type with ordinary tails. By a long series of experiments he was able to announce that the numerous types and colors found in the fancier's dovecotes could all be bred back to a type resembling the rock pigeon that nests in the cliffs of the Mediterranean; from which he argued that our tame pigeons, of whatever color or variety, are derived from a single ancestral type, the rock pigeon. The result of his observations he made public in a famous volume called *The Origin of Species.*

Two phrases, "natural selection," and "the survival of the fittest," are heard frequently in connection with Darwin's theories. The strongest, and presumably the handsomest members of a species, naturally choose each other and improve the race, while the weaker, less favored members, especially if food be scarce or conditions unfavorable, are forced to the wall. In this way, by a process of natural selection a species may change in a marked degree.

The other phrase may be understood better perhaps by an illustration, drawn from the common muskrat that lives in shallow waters and burrows in banks. In case the homes of these animals were to dry up gradually, the theory is that those members of the species least able to do with less water would perish, while the others lived. This process, being kept up from generation to generation as the sloughs dried up more and more, would finally develop a species of dry-land muskrats. Out of each generation, the survival of the fittest members for a land life would develop a species of muskrats as able to live without bodies of water as are the house rats.

To illustrate further, in a hawk-infested district, the swiftest, shiftiest sparrows of each generation escape the hawks. The survival of the fittest members of each generation would develop in time a species of swift, alert sparrows, practically safe from old-fashioned hawks. In the meantime, the starvation of hawks unable to catch sparrows, and the survival of the fittest hawks of each generation would, in time, develop

a new species of extraordinarily quick sparrowhawks. Thus we should have a new species of sparrows and a corresponding new species of hawks. Many other examples might be given, but these are sufficient.

Other factors enter, of course, into Darwin's theory, but natural selection and the survival of the fittest account, in his judgment, with changes of climate, soil, and moisture, for numerous species and varieties of the violet, Indian corn, sheep—in short, of both plants and animals. An extension of the Darwinian theory, which is closely connected with evolution, has led to many startling conclusions; for instance, that the whale and the seal are descendants of former land animals, and that the remote ancestors of birds were reptiles, etc.

At first these doctrines met with opposition from those who considered them irreverent. Agassiz was one of those who stood stoutly for separate acts of creation Scientific men now, however, have very generally accepted Darwin's theories; holding it quite as reverent to trace varieties and species to the working of great laws as to assert that the Creator established fixed types which defy the influence of time and season.

In a late work, *The Descent of Man*, published 1871, Darwin maintained that man is descended from an early ancestor, having more or less of a monkey-like nature. For this theory he was bitterly assailed as ungodly. His favorite retort was that he would rather be regarded as the descendant of a monkey than of some people that might be named. Darwin was buried fittingly in Westminster Abbey.

The present generation think of him who bore this name as a rare combination of genius, industry, and unswerving veracity, who earned his place among the most famous men of his age by sheer native power, in the teeth of a gale of popular prejudice, and, notwithstanding provocations which might have excused any outbreak, kept himself clear of all envy, hatred, and malice, nor dealt otherwise than fairly and justly with the unfairness and injustice showered upon him; while to the end of his days he was ready to listen with patience and respect to the most insignificant of reasonable objectors.—Huxley.

See WALLACE; CROSS-FERTILIZATION; MUTATION.

Date. See CHRONOLOGY.

Date Palm, a fruit-bearing palm tree, ranging from the Canary Islands, through North Africa and Arabia, to India. The date palm is a lofty tree, thirty to one hundred feet in height. It bears clusters of 150 to 200 plum dates. A bunch weighs 20 to 25 pounds. A tree yields from 10 to 30 clusters a year. Dates are rich in sugar. The dried dates of commerce contain half their own weight of sugar. Dates are the principal production of the Arabs, and are their chief article of diet. Cakes of dried dates are their food on caravan trips. Deprive the Arab of the camel and the date, and vast sections of country would be depopulated. It is the chief plant of the oases of the Sahara. The crown of the tree is eaten as a palm cabbage; a fermented liquor is made from the fruit, and also from the sap. Baskets, bags, mats, wicker work, fans, walkingsticks, and ropes are made of the leaf-stalks, leaf-blades, and fiber. Portions of southern California and Arizona, dependent on irrigation and farthest removed from the cooling influence of the sea, have been found well adapted to date culture and have begun even to make shipments to the trade. See PALM.

Daudet, Alphonse, ål-fôns dō-dā (1840-1897), a French novelist. He was born at Nimes, and educated at the Lyons Lycée. He went to Paris and began to write verse when about seventeen years of age. His work met with some degree of success and he continued to write, contributing both prose and poetry to various periodicals. From 1862 to 1872 he produced a number of dramas which were only moderately successful. He produced during the remainder of his life many novels and humorous writings. Among those most popular in America are *Jack, Kings in Exile, Letters from My Mill, Tartarin of Tarascon,* a good humored satire directed toward the author's compatriots, and *Tartarin on the Alps.*

Daughters of the American Revolution, a patriotic society. The society was organized in the city of Washington, D. C., October 11, 1890. The headquarters are in Washington. Its present membership (1910) is reported by the secretary-general to be 60,250. One thousand

state chapters exist in forty-five states and territories and the District of Columbia, presided over by regents. Chapter regents have been appointed for England, Cuba, and the Philippines. Any woman may be eligible for membership who is of the age of eighteen years, and who is descended from an ancestor who, "with unfailing loyalty, rendered material aid to the cause of independence as a recognized patriot, as soldier or sailor, or as a civil officer in one of the several colonies or states, or of the United Colonies or States," provided that the applicant shall be acceptable to the society. Every application for membership must be indorsed by at least one member of the national society, and is then submitted to the registrars-general, who report on the question of eligibility to the board of management, and upon its approval the applicant is enrolled as a member.

Dauphin, dau'fĭn, a title given the eldest son of the French king. It was originally the title of the lord of the province of Dauphine. The last of these, dying without heir, bequeathed his territory to the French crown on condition that the king's first born son should be the Dauphin, or lord of Dauphine. The Dauphin's wife is known in history as the Dauphiness. In case the king had no son, the title was not given to his heir. The term is thought to be derived from the dolphin, worn as a symbol by the house of Dauphine. France being a republic, the title is now extinct. The Dauphin of France corresponds to the Prince of Wales in England, and to the Crown Prince of Germany.

Davenport, the most important commercial city of Iowa. It is the county seat of Scott County and is situated on the Mississippi River, one hundred fifty-four miles from Chicago and opposite Rock Island, Illinois. The population in 1920 was 56,727. It is served by the Chicago, Rock Island and Pacific, the Chicago, Milwaukee and St. Paul, the Chicago, Burlington and Quincy, and by other railroads, while steamboat communication with all points between St. Paul and St. Louis add to its advantages. Davenport is in a rich agricultural region and coal is found nearby. Among manufactured products are soap, glucose, cigars, beer, flour, woolen goods, pottery, cordage, lumber, farming tools, carriages, and machinery. The city is built on the slope of a bluff which extends for three miles along the river. Two fine bridges connect it with the city of Rock Island. On the island, which is crossed by the wagon bridge, are situated the United States Arsenal and other Government buildings. The city has two opera houses, several hospitals, a public library, and many other handsome buildings. The State Orphanage, Saint Ambrose College, the Academy of the Immaculate Conception and other educational institutions are located there. The Academy of Natural Sciences, organized in 1867, has a large scientific library and an interesting collection of mound-builder relics.

David, a central figure in Hebrew history and literature. According to Ussher, he was born 1085 and died 1015 B. C. The lad's life with his father Jesse's flocks; the friendship of Jonathan; the jealousy of Saul; David's skill on the harp and skill with the sling; the death of the Philistine giant, Goliath; the winning of Abigail, his wife; the love of his sister Zeruiah, and the devotion of her three sons, Joab, Abishai, and Asahel; the extension of the kingdom of Israel over the surrounding heathen nations; his great crime toward Bathsheba and her husband Uriah; the faithfulness of the prophet Nathan; the rebellion of Absalom; the death of Abner; and David's preparations for the building of a great temple,—in all a reign of thirty-three years,—form one of the most interesting portions of the scriptural narrative. The Psalms of David, the sweet singer of Israel, rank with the finest examples of poetry in the Hebrew or any other language. In the King James Bible, that is to say, the common edition, the collection includes 150 psalms. It is the hymn book of the Hebrew people, called in their tongue the book of praises. In the original most of these psalms or sacred songs have titles. The title gives the name of the poem, the tune to which it is to be chanted, the occasion on which it is to be used, and the name of the au-

thor. According to these titles, one psalm was written by Moses, seventy-three by David, twenty-six by Solomon, and others by various writers. Thirty-four, assigned to no particular author, are called orphans by the Hebrews. Most critics think that David really wrote about forty of the selections. See BIBLE.

David Copperfield, a novel by Charles Dickens. It was published in monthly installments, the first chapters appearing in May, 1849. The story was completed and was published in book form the following year. *David Copperfield* is generally considered Dickens' masterpiece. It is without real plot. It is a simple story of the life of David from the day of his birth until, well on in years, his character is formed, and he is settled apparently in life. It contains considerable autobiography, more or less disguised. Digressions and many minor incidents, and even plots occur. This is in accordance with Dickens' usual method, and must not be regarded as indicative of inability on the author's part to invent and carry out a plot. *Barnaby Rudge* and many of his short stories prove him quite capable of this. The manner of publication must be held accountable for this fault, if fault it be. Nearly all of Dickens' novels were written in installments, not from the author's choice, but because public and publishers demanded it. Each installment must contain incidents of positive interest and still leave the writer ample freedom for the next installment, which was seldom written until after the publication of the previous one. Under such conditions, a plot, in the technical sense of the word, is impossible. To many readers, however, a story like *David Copperfield*, while less exciting, is more pleasing because more real than one constructed on more artistic lines. The average individual does not become entangled in complicated "plots." As he passes through his own varied experiences he is touched here and there by the lives and experiences of others, the incidents of whose careers become more or less involved with his own. This is the case with David Copperfield, which accounts in large measure for its popularity.

Dickens himself has said: "Like many fond parents I have in my heart of hearts a favorite child—and his name is David Copperfield." This has been explained on the ground that it is a story of his own life. It is evident to the sympathetic reader that, whether David is or is not Charles Dickens, Charles Dickens was certainly "David" while he wrote the story; that he lived, worked, and suffered in the scenes through which David passes; that to him Micawber was a real, if unavailing, friend; Ham Peggotty a hero, Steerforth an admired and disappointing companion, Little Emily a dearly loved sister, and Agnes a guiding spirit.

The style of *David Copperfield* presents, in a more marked degree than any other of his works, Dickens' peculiar characteristics. It is more easy and spontaneous; the pathos is more realistic; the humor, if less exuberant, is of a finer and more enduring quality. Nowhere does the general tone and character of expression so readily change to suit thought and feeling. The freedom given by the autobiographical form may account for this. There are many instances of most vivid description in the story. Mr. Peggotty's home in the boat, the Rookery, Betsy Trotwood's cottage, are clear pictures in the minds of thousands. It would be difficult to find in literature a nobler description of a storm than that in which Ham Peggotty gives up his life. Little Emily, with her false lover and her faithful uncle; Rosa Dartle, with her sad experiences and her awful inner life; Dr. Strong; his young wife Annie; their troubles with Jack Maldon and Uriah Heep, are stories within a story, complete and beautiful.

No one can ever believe this narrative, in the reading, more than I have believed it in the writing.—Dickens' *Preface to David Copperfield.*

Agnes Wickfield in *David Copperfield* is the most charming female character in the whole range of fiction.—Chambers.

In *David Copperfield* it is not difficult to trace the maturing power of experience, which points to the highest aims, and rejects those adventitious sources of attraction which are so tempting in the early career of genius.—Knight.

Davis, Jefferson (1808-1889), president of the Confederate States. He was

a native of Kentucky, but was reared in Mississippi. He was graduated from West Point in 1828, and served in the Black Hawk War of 1831-2. In 1835 he resigned and undertook the management of a cotton plantation in Mississippi. In 1845 he took his seat in Congress, but resigned to lead a regiment of Mississippi volunteers in the Mexican War. In 1850 he was elected to the United States Senate. During President Pierce's administration he was secretary of war, and again took his seat in the Senate in 1857. He was a constant advocate of the doctrine of state rights. When his state seceded he made a farewell speech in the Senate, February 9, 1861. The provisional congress of the Confederacy chose him president, a position which he held continuously until the collapse of the Confederacy. At the beginning of the war he made an appeal to the North to allow the South to secede peaceably, claiming that the Southern States had a perfect right to do so under the Constitution. Whether due to circumstances, or whether the duties of the presidency required him to do disagreeable things, the fact remains that Davis was not respected, either in the North or in the South, as were Lee and Stonewall Jackson. The South considered him arbitrary and tyrannical; the North held him responsible for the sufferings of soldiers in the Southern prisons. At the close of the war he was arrested and conveyed to Fortress Monroe. The grand jury of the District of Columbia indicted him for treason. He lay in prison for about two years without being brought to trial. He was then released on bail, Horace Greeley being one of the bailsmen. After his release by the general amnesty act of 1868 he went into business at the head of an insurance company, retiring finally to his estate in Mississippi. His remains were interred at Holly Wood Cemetery, Richmond, Virginia. His views of the Civil War are worded in *The Rise and Fall of the Confederate Government,* published in 1881. See SECESSION.

Davis, Mrs. Rebecca Blaine Harding (1831-1910), an American story writer. She was born in Washington, Pennsylvania. She was the first American writer to make use of the labor question in fiction. Her novels include *Life in the Iron Mills —A Story of Today,* published later as *Margaret Howth, A Law unto Herself, Waiting for the Verdict,* and others. Mrs. Davis has written many short stories which have been more widely read than her novels. Her style is simple and direct, and the tone of her stories invariably wholesome.

Davis, Richard Harding (1864-1916), an American novelist, war correspondent, and writer. He was a son of Rebecca Harding Davis, and was born in Philadelphia. He received his education at Lehigh University, and began his journalistic life in Philadelphia. *Gallegher,* his first literary success, is a story from his own newspaper experiences. It appeared with other stories in 1891. Since that time Davis has produced many novels and short stories which have won popular favor. *Soldiers of Fortune, Van Bibber and Others, The King's Jackal, The Bar Sinister,* and *The Princess Aline* are among those best known. Davis acted as war correspondent during the Spanish-American War, in South Africa, and in Europe.

Davy, Humphry (1778-1829), an eminent English chemist. He was born at Penzance, Cornwall. As a lad he was a fine hand at telling stories and setting off fireworks. At first a surgeon's assistant he became interested in chemistry, and held various positions as a lecturer. He became president of the Royal Society in 1820. Davy traveled extensively, and died, on the way home, at Geneva in 1829. Davy discovered several new elements, including potassium, barium, calcium, strontium, and magnesium. His early talent for storytelling developed into famous ability as a lecturer. It became quite the rage in London to attend Davy's lectures. Davy's great service to workingmen remains to be noticed. The greatest danger to which coal miners in their underground life are exposed is that of the explosion of fire damp, an inflammable gas that collects in the mines. It is almost as dangerous as gunpowder, and being frequently set off by the miners' lamps, caused great loss

of life. Davy collected fire damp from the coal mines of Newcastle and began experimenting. He first found out that it is made of carbon and hydrogen; then he found that it must be mixed with a large quantity of air before it will explode; next that it will not explode unless very hot; and, lastly, that but little heat is produced by an explosion. Davy reasoned that, if the flame of a miner's lamp could be prevented from heating the fire damp, there would be no likelihood of an explosion. He surrounded the flame of a lamp by a cylinder of fine wire gauze. The portion of fire damp entering through the gauze exploded in tiny puffs without creating heat; the gauze prevented the lamp flame from reaching and heating the fire damp outside, and the problem was solved. Coal miners carry the Davy safety lamp today. The inventor was made Sir Humphry Davy in recognition of his service. See DAMP.

Davy Jones, a name in common use among sailors, especially in the expression "Go to Davy Jones' locker," which signifies to go to the bottom of the sea. The origin of the name is uncertain, some claiming that it is from Jonah. It would seem that Davy Jones is the ruler of the evil spirits of the sea.

Dawson, Sir John William (1820-1899), a celebrated Canadian geologist and educator. He was born in Nova Scotia, educated at Edinburgh University, and at the age of thirty became Superintendent of Education in the province where he was born. Five years later he became principal as well as professor of natural history, at McGill College at Montreal, with which institution he was connected for nearly forty years. He established the McGill Normal School in 1857 and was its first principal; and a school of engineering the following year. As a factor in Canadian educational development, he stands among the first. He early took an interest in geology and he ranks among the great men in that field. Most of his publications were along that line. Aside from many treatises on the geology and natural history of Canada may be mentioned *Agriculture for Schools, The Story of the Earth and Man, The Origin of the World,* and *Modern Ideas of Evolution.* He was a member of the Royal Society (London), was knighted in 1883, and was president of the British Association in 1886.

Day, an astronomical term of varied meaning. Ordinarily it is the period of light, as distinguished from the darkness or night. It also means a period of twenty-four hours. In the latter sense the day of the Babylonians, from whom we have many astronomical ideas, began at sunrise. Among the Jews and Greeks the day began at the going down of the sun. This was formerly the observance in New England. All labor and play ceased at sunset Saturday. As soon as the sun went down Sunday the children of the village burst forth with many shouts to play. Among the Egyptians and Romans the day began at midnight. Our day, derived from legal sources, that is to say, from Roman law, has finally prevailed over the Hebrew day as derived from the Bible. The question of convenience has been a determining factor. It would be gain in many respects if the twenty-four hours of the day were numbered from one to twenty-four consecutively, making 2 P. M. 14 o'clock, etc.

The day, as distinguished from the night, is of uniform length only on the equator. The summer day lengthens as we go from the equator toward either pole. The longest day for each locality equals the longest night for the same locality, but it comes six months later.

Dayton, an important city of Montgomery County, Ohio, is located on the Miami River, about 60 miles northeast of Cincinnati. It is an important railroad center and manufacturing point. The city is beautifully laid out with broad streets and fine buildings.

The public school system is of high order and in addition there are located in the city the United Brethren Theological Seminary, St. Mary's Institute and the Academy of Notre Dame. Here also are located a soldiers' home, hospitals, a state insane asylum, and other institutions.

The city has large water power and among its manufactured products are cash registers, railway cars, oil-mill machinery,

steam pumps, sewing machines, automobiles, engines, flour, sash and doors, and other articles. In April, 1913, a disastrous overflow of the river caused great loss of life and property. The population in 1920 was 151,559.

Deaconess, one of an order of women in the early Christian church. Deaconesses assisted in the baptism of women, instructed girls in their catechism, took care of the sick, helped the poor, and were present at interviews of the clergy with women. They were usually widows and were required to remain unmarried. At first a woman could not belong to the order until she was sixty years old, but later forty-five years was made the minimum age. The order became extinct in the twelfth century. In the nineteenth century the order of deaconesses was revived in several Protestant churches, notably the Protestant Episcopal, the Methodist Episcopal and the Lutheran churches. Usually two years' training is required before a woman is received into the order. The deaconesses of any one parish reside together in a home established for that purpose. Their work is largely among women and children. They nurse the sick, feed the hungry, clothe the poor, rescue the sinful, and comfort the sorrowful. They are also trained to assist in religious services and to give religious instruction.

Dead Letter Office. See POST OFFICE.

Dead Sea, a celebrated lake of Palestine. It occupies a sunken valley at the eastern foot of the Lebanon Mountains. It is the deepest known inland depression in the earth's surface. The lake is forty-six miles in length and from five to nine miles wide. Its surface is 1,292 feet below the surface of the Mediterranean. The depth of the water varies from three feet to thirteen hundred feet at the center of the northern section. The River Jordan is the chief tributary. There is no outlet. The waters are charmingly blue, but bitter to the taste, and fetid. It is several times as salt as the ocean. People who go in bathing cannot sink. They require to use care, or else the body assumes an inconvenient position—feet up and head down. The only life in the water consists of a certain low animalcule. The east and the west shores are steep limestone cliffs. The northern shore is a brackish, muddy flat, with here and there a dead tree incrusted with salt. The southern shore is equally dreary and desolate. It is marked by a long ridge of rock salt, 300 feet high, called by the Arabs the ridge of Sodom. There are no present indications that the valley ever was inhabited; there is little life of any sort in the vicinity, though a few bird-inhabited thickets of oleander are found on the shore and in the valleys of tributaries. Twenty-five per cent of the water consists of solid matter; seven per cent is salt. Divers bring up salt from the bottom of the sea, dry it in the sun, and carry it on camels to market at Jerusalem. This lake has been called also the Sea of Sodom and the Salt Sea. See CASPIAN; DEATH VALLEY.

Deaf-Mutes, persons both deaf and dumb. Inability to talk follows from the inability to hear. Deafness is due to some defect in the ear, of course. It may be traced often to scrofula and other diseases. The children of a marriage between first cousins are particularly liable to be deaf. A deaf person is wonderfully imitative. The necessity of communicating by signs when words fail has led to the gradual evolution of a sign language, now regularly taught in deaf-mute schools, or schools for defectives, as they are called.

The ancients and the medieval writers considered it hardly possible to educate a mute. Accounts of individual instruction appear with increasing frequency, however; and in 1778, during the progress of the American Revolution, the first public school for deaf-mutes was established at Leipsic. Public institutions for gratuitous instruction were soon established in other European countries. The first in America was founded in 1817 at Hartford. They are now the rule in the various states and provinces.

In addition to the sign language, which has been compared to that of the plains Indian, sign alphabets have been devised. Spelling by hand is rather slow, but it is accurate. There is no special difficulty, of course, in teaching deaf-mutes to read and to write with facility. Educated deaf-

mutes prefer to communicate by writing. There are between 300 and 400 schools for deaf-mutes in the various countries of Europe, with a few in Japan and India. There are seven in Canada; in the United States 128 schools are attended by about 10,000 pupils. There were 40,592 deaf-mutes in the United States in June, 1900—one to each 2,400 of population.

Death Valley, an alkaline valley in a desert region in California, on the Arizona border. It occupies a depression 276 feet below the level of the sea. It is the lowest depression in the United States. Mount Whitney, 14,500 feet high, one of the highest elevations in the United States, is only seventy-five miles away. The valley is seventy miles long and is ten to twenty miles in width from foothills to foothills. Of a party of thirty explorers who entered the valley in 1849, looking for gold, all but twelve perished; whence the name. In summer it is said to be one of the driest, hottest places on the face of the globe. The thermometer reaches 130 in the shade. The nights are too hot for sleep. The valley is surrounded by volcanic mountains that shut out moisture. Terrific whirlwinds cross the plain. They are gyratory columns of sand dust—sand augers, they are called—thousands of feet in height, reaching to the clouds, we might say, only there are no clouds in the pitiless sky. Tourists may enter the valley late in autumn, but must carry water for man and beast. The one bitter alkaline stream that enters the valley is soon swallowed up in the sand. Springs are far apart. Visitors to the region find a sandy, gray waste, barren save for the stunted cacti and dwarf greasewood. A few crows, starved jackrabbits, slinking coyotes, rattlesnakes, buzzards, and horned toads manage to pick up a living. The surrounding mountain ranges are rich in minerals, but the mines are difficult to work for want of water.

The Death Valley is the lowest of a series of old lake beds found in the vicinity. A salt marsh or sump follows the center of the valley almost from end to end. This sump is seemingly bottomless. The longest poles are swallowed up. A stone is said to have carried a line down two hundred feet without stopping. The sump is about half as wide as the valley. Near the middle it contracts to two miles in width and is shallow. Here a wagon road was constructed for the long mule trains once engaged in hauling borax from the valley. There are a few footpaths also, but many men and beasts have lost their lives in trying to cross the swamp.

See BORAX.

Debate, a consideration of a two-sided question. In one sense of the word a person may debate alone. Hamlet's famous soliloquy, "To be or not to be," was a debate with himself. When Caesar rode up and down on the bank of the Rubicon he was arguing both sides of a question with himself. He ended the debate by issuing orders to cross the boundary and march on Rome.

In parliamentary usage a debate is a series of speeches, long or short, some favoring, others opposing, a proposed measure. If all speakers hold the same view such a consideration of a question can hardly be called a debate. A prearranged debate between two speakers, as two rival candidates for office, is called a joint debate. In 1858 Abraham Lincoln, who had been chosen by the Republicans to contest the United States senatorship, challenged Stephen A. Douglas, the incumbent, and the most effective stump orator in the country, to a series of joint debates. The fame of the speakers and the burning question of free soil drew tremendous audiences. Douglas won reëlection at the hands of the Illinois legislature, but Lincoln drove his opponent into a logical pocket, and won a reputation that brought him the nomination for the presidency. To succeed in joint debate a speaker must carry his end of the argument well, and not only that, he must be prompt to refute the arguments of his adversary and quick to take advantage of an opponent's errors. Daniel Webster made a strong point of restating an opponent's argument, fairly strengthening it, and then crushing it with a powerful sentence or two.

The greatest arena for debate in the world is the British House of Commons. The measures that come before that body

may concern a single parish or even a single parishioner in Wales, or they may be measures affecting the welfare of half the civilized world. The great debates are likely to come off after dinner, that is to say, about eight or nine o'clock at night. A long table occupies the center of the hall. Along one side sit the members of the ministry with their books and documents before them. Directly across the table, and facing them, sit the leaders of the opposition. The members of the government party and of the opposition sit behind their leaders on long benches, one tier rising behind another, but all facing the center. The speakers rise in order, the younger men first, a speaker on one side, then a speaker on the other. The debate is closed by the acknowledged leader of each party, usually an ex-minister for the opposition and the prime minister for the government. Then the vote or decision is taken.

A school debate is an excellent method of arousing interest in geographical, historical, and social questions. In an elementary debate, designed to enliven school work, it is not necessary to be formal. A pupil may be appointed to preside. A leader should be appointed for each side of the question. A day or a week may be allowed for preparation. It is customary for the leader on the affirmative to speak first. Then comes the leader on the negative side. Other speakers follow, as arranged by the leaders. At the close of the debate the leaders sum up for their respective sides. The affirmative side is the more difficult. It is considered proper courtesy, therefore, to reverse the order in closing, and to allow the leader on the affirmative side to speak last. In their closing speeches the leaders are expected to introduce no new arguments, but to confine themselves to refutation and summary. A decision by judges adds interest to a debate. No formal rules can be laid down for a decision; but a judge is justified in considering both argument and skill of presentation. The burden of proof is held to lie on the affirmative side. If the arguments of the affirmative be refuted, the negative wins, even without presenting arguments on the negative side. It is well for the instructor to follow with a review of the debate and suggestions for improvement.

The following topics were suggested in a recent Winona Normal School bulletin as suitable for an advanced class in geography:

1. *Resolved,* That Minnesota is a more desirable state to live in than California.

2. *Resolved,* That the acquisition of the Philippine Islands will ultimately prove of more value to the United States than the purchase of Alaska.

3. *Resolved,* That national expositions do not benefit the countries in which they are held.

4. *Resolved,* That the earth is spheroidal in shape and that we live on the outside of it.

5. *Resolved,* That Arctic explorations should be continued.

6. *Resolved,* That the United States Weather Bureau is of sufficient value to justify its continuance.

7. *Resolved,* That Canada should be annexed to the United States.

8. *Resolved,* That in the future the Amazon will be of more commercial importance than the Mississippi.

9. *Resolved,* That on account of location Duluth is bound to become as great a city as Chicago.

10. *Resolved,* That the natural resources of Wisconsin are as great as those of Minnesota.

11. *Resolved,* That there are as many places of interest in Chicago as there are in New York City.

12. *Resolved,* That it is better to see and know your own country before traveling abroad.

13. *Resolved,* That navigation on the upper Mississippi is of sufficient importance to justify the national government in opening and maintaining a six-foot channel to St. Paul and Minneapolis.

14. *Resolved,* That the Panama canal will be of sufficient value to justify the government in building it.

15. *Resolved,* That the victory of Japan over Russia advanced the interests of civilization.

16. *Resolved,* That the United States government should spend less money in improving rivers, and more in irrigating the arid lands of this country.

Debs, Eugene Victor (1855-), an American socialist and labor leader. He was born at Terre Haute, Indiana. His education was received in the common schools, and at an early age he became a locomotive fireman. He was sent to the Indiana legislature in 1885, later held an office in the Brotherhood of Loco-

motive Firemen and was president of the American Railway Union from 1893 to 1897. He conducted the railway strike of 1894, and while this was in progress was charged with conspiracy. He was acquitted but was imprisoned for six months for contempt of court. He became prominent among the socialists of the country and was four times their candidate for president. In 1918 he was convicted of inciting disloyalty and sentenced to the Federal prison at Moundsville, W. Va. for 10 years.

Debts, National, amounts owed by governments. A national debt is in the form usually of bonds bearing a fixed rate of interest. Sometimes the bonds are sold for face, sometimes at a premium, and sometimes at a ruinous discount—all according to the credit of the borrowing government and the amount of money waiting for investment. War is the great cause of public debt. The Spanish-American War, the Boer War, and the Russo-Japanese War increased the debts of the countries concerned. Government bonds are attractive for several reasons. They are considered safe. They are exempt usually from taxation; they are converted readily into cash, and may be had in large or small blocks.

Before 1914, according to the *Statesman's Year Book* nearly, if not all civilized countries, even frugal Switzerland, had a bonded indebtedness. France had the largest national debt. It was increased greatly by the expense of the Franco-Prussian War and the indemnity demanded by the Germans. The public debt of Great Britain was considered one of the most remarkable in the world. It had been formed largely by the expense of acquiring and administering so many colonial possessions. No attempt was being made to reduce the principal even before the war.

The debt of the United States began with borrowing money to pay off the expenses, and the debts of the Revolutionary War. Under Washington's first administration, and thereafter, for a time, the public debt was about $75,000,000. The purchase of Louisiana increased the debt to $86,000,000. This amount was diminished year by year, but ran up again on account of the War of 1812 to about $125,000,000; but by 1835 this debt had been reduced to a nominal $37,000, with $40,000,000 on deposit in various banks to the credit of the United States. The Mexican War created a new debt of $70,000,000, which had not been materially reduced before the enormous expense of the Civil War created a national debt unprecedented for rapidity of growth. In February, 1861, Congress authorized the secretary of the treasury to borrow $25,000,000; a year later a similar act authorized the borrowing of $250,000,000; and this was but one of many similar acts. The United States debt reached its climax in 1866, when the statement of the United States treasurer showed a public debt of $2,773,236,174. By 1893 this debt had been reduced a half. The Spanish-American War, the erection of public buildings in many cities, the enlarging of the pension list, the extension of rural free delivery and the building of the Panama canal, brought the debt to a point of over two billion again. Of this amount $925,011,637 was a bonded indebtedness bearing interest. At the close of the Civil War our national debt amounted to $79.44 per person. In 1913 the net total of the National indebtedness above cash on hand, amounted to only $11.10 per capita.

In April, 1918, the Federal Reserve Board of the United States issued a comparative statement of the war debts of the twelve principal warring nations. It showed that after three and a half years of war the debts of the chief allied and central powers had increased from nearly $26,000,000,000 to more than $137,000,000,000. Most of the more than $111,000,000,000 increase represents war expenditures up to the early part of 1918. Following is an authentic table showing the pre-war national debts, and the debts down to the signing of the Armistice, of the seven most important nations included in the Reserve Board list:

	Before War	Nov. 11, 1918
Great Britain	$3,500,000,000	$34,000,000,000
France	6,800,000,000	27,000,000,000
Italy	2,900,000,000	11,000,000,000
United States	1,300,000,000	24,000,000,000
Russia	5,000,000,000	27,000,000,000
Germany	1,200,000,000	39,000,000,000
Austria-Hungary	3,700,000,000	24,000,000,000

All in all, it may be said that the seven nations listed aggregate the inconceivable debt of nearly $200,000,000,000.

A tabulation of other national pre-war debts follows, many of them also much increased by the world war:

Countries	National Debt.
Argentina	$444,440,067
Australasia:	
Australia, States	1,128,632,767
New Zealand	306,059,246
Belgium	621,640,286
Bolivia	2,977,924
Brazil	542,213,359
Bulgaria	73,452,805
Chile	95,720,654
China	597,192,000
Colombia	19,541,567
Cuba	47,695,350
Denmark	$64,231,713
Greece	167,052,145
Japan	932,445,798
Mexico	222,058,181
Netherlands	458,069,211
Norway	91,764,945
Persia	16,737,500
Peru	15,266,000
Portugal	864,701,627
Roumania	278,247,239
Servia	88,971,135
Siam	4,866,500
Spain	1,829,265,995
Sweden	102,059,388
Switzerland	19,787,648
Turkey	458,603,213

Decalogue, dek'a-log, the ten commandments, found in the twentieth chapter of the book of Exodus, and in the fifth chapter of Deuteronomy. These commandments were given to Moses during the first of the forty years spent by the Israelites in the wilderness after they had been led out of Egypt. The nineteenth chapter of Exodus tells how Moses in accordance with the command of God called the people forth out of the camp "to meet with God," how they stood below Mount Sinai while Moses went up to the top of the mountain and received the commandments directly from God. In Deuteronomy Moses tells the people that God wrote these commands on two tables of stone and delivered them unto him. The Jews call the commandments the "ten words" which is the literal meaning of the Greek word decalogue. The precepts are somewhat differently divided in different churches. The Roman Catholics and Lutherans regard Exodus xx: 3-6 as one commandment and divide the seventeenth verse into two commandments, while all the protestant churches except the Lutheran consider the third verse as one commandment, the fourth, fifth and sixth as another, and do not divide the seventeenth verse but regard it as one commandment, the tenth.

Decameron, The. See Boccaccio.

De Candolle, deh kŏn-dol', **Augustin Pyrame** (1778-1841), a noted French botanist. He was born at Geneva and educated first for the law, then for medicine. It is noticeable that the botanists of the eighteenth century approached their favorite science by way of medicine. De Candolle was wont to excuse himself for leaving medicine by saying, "If I make a mistake in naming a plant, I can set it right." Influential friends wondered that a man of his talents should spend his time running about France gathering plants. After holding various positions De Candolle settled down in a professorship at Geneva, where he accumulated a large herbarium and wrote several botanical treatises. He named many plants new to science. De Candolle was a close reader of Linnaeus' works, but adopted the classification of Ray and Jussieu. See Linnaeus.

Decatur, Stephen (1779-1820), an American naval officer. He was of French descent and was born at Sinnepuxent, Maryland. His father, also Stephen Decatur, had won distinction in the navy during the Revolution by capturing English vessels. In 1798 at the commencement of his hostilities with France he was placed in charge of the Delaware and with this vessel captured two French privateers. That same year the young Stephen, then nineteen years of age, entered the navy as midshipman. The next year he was made lieutenant. This was at the time, it will be remembered, of the Tripoli War, a result of the pillaging and confiscating by the Barbary pirates. Decatur served in this war, and was at various times in command of several different vessels. In 1804, while in charge of the Intrepid, he entered the harbor of Tripoli, captured and burned the Philadelphia, which had been taken prison-

er by the Tripolitans, and made his escape under the terrific fire of 141 guns. This deed was pronounced by Lord Nelson "the most daring act of the age." Decatur was at once promoted to the rank of captain, the highest regular rank in the United States navy. A few years later he was given the title of commodore by courtesy, as were all captains in the navy who had commanded a squadron. The regular office and title of "commodore" existed in the United States navy from 1862 to 1900 only. Decatur took part in several later attacks on Tripoli. In the War of 1812, in command of the frigate United States he captured the British frigate Macedonian, but two years later was obliged, after a gallant resistance, to surrender to four British ships. In 1815 Decatur was put in charge of a squadron sent to operate against Algiers and the Algerine pirates. He was successful in the undertaking, forcing the Dey of Algiers to declare the American Flag inviolate. He then brought Tunis and Tripoli to terms, obtaining satisfaction for their offenses in breaking the terms of their treaties. In 1816 Decatur was made naval commissioner. He was shot in a duel by Commodore James Barron.

Decatur, a manufacturing city of Illinois. It is situated on the Sangamon River, thirty-eight miles east of Springfield. It is important on account of its industrial interests, and as a distributing center for coal, live-stock, grain and other argicultural products. The city is served by the McKinley Electric system and by the Wabash, the Illinois Central, the Vandalia, and other steam railroads. There are foundries, railroad shops, bridge works, the largest corn mills in the United States, and manufactories of flour, farming tools, furniture, carriages, caskets, mantles, and engines. The city has an excellent public school system, about twenty-five church edifices, a hospital, three national banks, and a public library. The James Millikin University and a Roman Catholic convent and academy are located there. The population of Decatur in 1920 was 43,818.

Deccan, the peninsular portion of India lying between the Bay of Bengal on the east and the Arabian Sea on the west. The word is Hindu, meaning the south, *i. e.,* the southern part of Hindustan.

December, the twelfth month of the year. In the Roman year, which began with March, December was the tenth month; whence the name. December 22d is the winter solstice—the period of shortest day in the northern hemisphere and of longest day in the southern. December 25th is the great holiday of the Christian world. Among the Romans the month was supposed to be under the special care of Vesta, the goddess of the hearth. The idea is a pretty one, symbolical of a season when the warm fireside and a bright flame are particularly acceptable. See CHRISTMAS; CALENDAR.

Decemvirs, dē-sĕm′vers, in Roman history, ten men appointed to systematize or codify the laws of the city. About 302 B. C. they presented their report. It was engraved on tablets of bronze erected in the Roman forum that all might read. A year later two additional tablets were added. The laws thus published are known as the Twelve Tables. School boys learned them by heart. The significance of the work of the decemvirs lies in the fact that their appointment and the publicity of the code were demanded by the common people, that all might know what the laws were, and be secure from prosecution under little known or forgotten enactments. Written laws are a safeguard against tyranny. See CODE; SIBYLS.

Declaration of Independence, a famous act of the Continental Congress. June 10, 1776, a committee of five, consisting of Thomas Jefferson, John Adams, Benjamin Franklin, Roger Sherman, and Robert R. Livingston, was appointed to draw up the Declaration. The chairman framed the report. A few clauses in the charges against the king were canceled by the Congress, but the Declaration as it stands today is substantially the work of Thomas Jefferson. It was reported June 28th. It was adopted July 4th amid the ringing of bells and general jubilee. Copies were sent out broadcast over the signature of the president and secretary. July 19th Congress ordered the Declaration engrossed on parchment, that the historic document

might be signed by the members. August 2d it was signed by fifty-three members, then present. Absentees and others signed later. The last signature was affixed November 4th. In 1823 a copperplate facsimile was made under orders of President J. Q. Adams. In the process, the artist faded the original text and the signatures until portions are illegible. Up to this date the Declaration was shown freely and on special occasions thereafter, but in 1823 it was sealed up in a steel case secure from light and decay. It rests in the keeping of the secretary of state at Washington. It is said that, of all the fifty-six signers, not one died with a tarnished reputation. The last survivor, Charles Carroll of Carrollton, Maryland, passed away in 1832.

Decoration Day, or **Memorial Day,** a day set apart for the decoration of the graves of soldiers who fell in the Civil War, and for the holding of commemorative exercises. This observance originated in the Southern States. It was copied in the North. In 1868 General John A. Logan, then commander-in-chief of the Grand Army of the Republic, issued a general order setting aside the 30th of May for the purpose of strewing flowers on the graves of old soldiers and for such exercises as local posts may direct. In many of the states that date is made a legal holiday. Owing to the earlier appearance of flowers in the South, April 26th is set apart as Confederate Memorial Day by Alabama, Florida, Georgia, and Mississippi, and May 10th by North and South Carolina. It is now customary, both North and South, to decorate the graves of soldiers regardless of the side on which they fought. Credit for this beautiful courtesy belongs to the women of the South. See HOLIDAYS.

Deduction. See THINKING.

Deed, in law an instrument in the nature of a contract usually employed in the conveyance of real estate. The word is Anglo-Saxon, and means that which is done beyond recall. Deeds for real estate, because of the permanence of the transaction, require greater form and solemnity than other contracts and are usually drawn with great care, and made a matter of public record.

The following are the principal requisites for a deed throughout the United States. It must be on paper or parchment and completely written before delivery. It must be between competent parties, upon neither of whom shall there be any restraint. It must relate to suitable property and the consideration must be good and valuable. It must be signed, sealed, and delivered and the obligee must accept it before it becomes binding.

It were well to distinguish between the two common kinds of deeds, warranty and quit claim. The former is one in which the grantor warrants the title, and agrees to make it good if any flaw is found; while in the latter, only such title as the owner has is transferred.

A deed is said to be in escrow when it is delivered to a third person to be held until after some specified event before delivery to the grantee. For greater security deeds are usually recorded by a public officer called a recorder or register of deeds. Such public record serves as *prima facie* evidence of the ownership of property and a deed so recorded would hold over another given for the same property not so recorded.

Deer, a family of cloven-hoofed, cud-chewing animals, including the elk, moose, caribou, and reindeer. There are numerous species found in both hemispheres, but, generally speaking, the deer corresponds in the north temperate zone to the antelope of southern Africa. The male of the deer kind is known as a stag, or a buck; the female as a hind, or a doe; the young, which are usually spotted, are called fawns.

The stag is provided with antlers. The antlers are bony outgrowths from the forehead. The first appearance of the antler is a blood-red swelling, which elongates rapidly until it has taken the shape of an antler. It is at first covered with a soft skin, when it is said to be in the velvet; after the bony material has set the velvet dries and rubs off. A stag sheds his antlers and grows new ones every year. His age may be known, within certain limits, by the number of branches. The antler of a stag a year old has but one prong; that of a two-year-old, two prongs. A royal stag is one with twelve-tined antlers.

Virginia deer. Muntjac of Java. Fallow deer.

Stag with doe and fawn. Roe (in background).

DEER.